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United States Department of Agriculture

Agricultural Research Service

Technical Bulletin Number 1698

A Taxonomic Revision of the New World Moth Genus *Pero* (Lepidoptera: Geometridae)

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ABSTRACT

Poole, Robert W. 1987. A Taxonomic Revision of the New World Moth Genus Pero (Lepidoptera: Geometridae). U.S. Department of Agriculture, Technical Bulletin No. 1698, 257 pp.

This bulletin is a systematic revisionary monograph of Pero, a large moth genus of the family Geometridae and subfamily Ennominae, with species in almost all areas of the New World except arctic North America and extreme southern South America. This revision includes 294 species, of which 119 are described as new, and is divided into 19 species groups. There have been 253 previously described names; 74 junior synonyms are given. Geographic variation within a species is described, and when appropriate is illustrated.

KEYWORDS: Ennominae, Geometridae, New World, Pero, systematics.

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By Robert W. Poole

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ACKNOWLEDGMENTS

I express my gratitude to John G. Franclemont for serving as my graduate adviser and also for many kindnesses shown me during my years at Cornell University, Ithaca, N.Y. I am also indebted to the late Harold Moore and Richard B. Root, Cornell University, for their guidance as thesis advisers.

The following persons provided me with specimens in their care: Fredrick Rindge, American Museum of Natural History, New York; D.S. Fletcher, British Museum of Natural History, London; W.C. McGuffin, Canadian National Collection, Ottawa; Howard Evans, Museum of Comparative Zoology, Cambridge, Mass.; E.L. Todd, National Museum of Natural History, Washington, D.C.; and Jerry Powell, University of California, Berkeley. Francisco Fernandez-Yepez, Facultad de Agronomia, Universidad Central de Venezuela, Maracay, made the facilities of the Rancho Grande Experimental Station available to me.

Part of the cost of the thesis research was covered by grants from the Allied Chemical Foundation.

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Issued March 1987

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A TAXONOMIC REVISION OF THE NEW WORLD MOTH GENUS PERO (LEPIDOPTERA: GEOMETRIDAE)

by Robert W. Poole[1]

Pero is a large genus of geometrid moths of the subfamily Ennominae taxonomically distinct from all other genera in the Geometridae. It is an entirely New World genus and is most highly evolved in the Andes, the mountains of southeastern Brazil and northern Venezuela. However, species of the genus are found in almost every conceivable habitat, including high montane, lowland, and northern coniferous forests, deserts, mangrove swamps, and paramo areas. Within the genus Pero are species exhibiting one or more of the following characteristics: Sexual dimorphism, polymorphism, extreme geographic variation, a high degree of individual variation, and even an apparent case of circular overlap of races.

The purpose of this bulletin is to provide a basic taxonomic revision of one of the largest genera of New World Lepidoptera. Revisions of large, primarily neotropical genera are rare. Hopefully this study will serve as a basis for more detailed studies on the distribution and biology of this complex genus and lead to general conclusions about the moths of the New World Tropics as a whole.

Pero as treated in this revision has 294 species, of which 119 are described as new, and is divided into 19 species groups. There have been 253 previously described names; 74 junior synonyms are given. Geographic variation within a species is described, and when appropriate is illustrated. Because several geographically variable species exist, I have broadly interpreted specific limits, and some may wish to consider my collection of races as superspecies.

TERMINOLOGY AND METHODS

Most of the characters used to define groupings and to distinguish species are in the male and female genitalia. Many of the structures in the male genitalia are unique to the genus and have no exact counterparts elsewhere in the Geometridae except in the closely related genus Nepitia Walker. The male genitalia of a hypothetical species of Pero are illustrated in figure 442 and the parts labeled. The terms of my own invention are costal fold, ventral process of the valve, and median process of the valve. There are structures similar to the costal fold in other genera of the Ennominae, although they are simpler and probably not homologous. The ventral and median processes of the valve are found only in Pero. The subscaphium is a sclerotized area of the anal tube and has been drawn out from its normal position between the uncus and gnathos. It may be highly developed and modified or almost absent. All other terms used for the male and female genitalia follow Klots (1956).[2]

In the drawings of the male genitalia, the left valve is not shown. In the preparations of the slide mounts of the male genitalia, the aedeagus was removed from its position between the juxta and the transtilla, and the vesica was inflated and placed on the slide below the rest of the male genitalia. In the female genitalia, usually only the ostium and part of the ductus bursae are shown. The outline of the last abdominal sternite is added for reference. The drawings of both the male and female genitalia are slightly simplified for clarity.

Because of the size of the genus, an effort was made to keep the presentation as concise as possible. In particular, the descriptions are designed to supplement the illustrations, which I believe are more useful than verbal descriptions. The descriptions include the diagnostic characters of a species and the colors of the moth. Only primary references to the original description are given.

In general, I have restricted type series to one or a few localities, although technically all specimens before me, as in the case of a new species, should be treated as paratypes. The primary reason for restricting paratype series was to avoid mixing type series if a geographically variable species should, at some later date, turn out to be two or more species.

The treatment of each species is concluded by the number of specimens examined, their dates of capture, and the localities by country and State as given on the insect labels. Any emendations are in brackets. The dates of capture may not accurately reflect the true flight period of those species represented by only a limited number of specimens. I suspect that in tropical America most species fly throughout the year.

GENUS PERO

Pero Herrich-Schaeffer, 1855a:108, 121. Type: Gonodontis rectisectaria Herrich-Schaeffer, designated by Fletcher (1979).

Pergama Herrich-Schaeffer, 1855b: figs. 142-143, and 1855a:108, 121. Type: Pergama polygonaria Herrich-Schaeffer by monotypy.

Azelina Guenée, 1857:156. Type: Azelina porphilaria Guenée, designated by Warren (1905).

Synemia Guenée, 1857:163-164. Type: Synemia polygonaria (Herrich-Schaeffer) by monotypy.

Meticulodes Guenée, 1857:192-193. Type: Meticulodes spongiata by monotypy. NEW SYNONYMY.

Egabra Walker, 1858:1668. Type: Egabra certissima Walker by monotypy. NEW SYNONYMY.

Eusenea Walker, 1860a:254. Type: Eusenea aeniasaria Walker by monotypy. NEW SYNONYMY.

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[1] Systematic Entomology Laboratory, Agricultural Research Service, c/o National Museum of Natural History, Washington, D.C. 20560. This bulletin is based on information contained in a thesis submitted to the Graduate School of Cornell University, Ithaca, N.Y., in partial fulfillment of the requirements for the degree of doctor of philosophy.

[2] The year after the author's name refers to Literature Cited, p. 134.

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Stenaspilates Packard, 1876:212-213. Type: Stenaspilates meskaria Packard by monotypy. NEW SYNONYMY.

Azelinopsis Warren, 1896:143-144. Type: Azelinopsis externa Warren by original designation. NEW SYNONYMY.

Marmarea Hulst, 1896:379-380. Type: Marmarea occidentalis Hulst by original designation.

Stenodonta Warren, 1905b:379. Type: Stenodonta incurvata Warren by original designation. NEW SYNONYMY.

Adult.--Antennae variable, simple to pectinate; palpi usually with first two segments large and upturned, third small and porrect; tongue well developed. Legs with epiphysis present; spurs of mesothoracic and metathoracic legs present, well developed. Wing shape and maculation variable; venation as in figure 441, but radial veins variable, usually arising from two roots. No supporting braces from base of tympani; no row of spines on third abdominal sternite; eighth sternite and tergite of male often modified, sometimes forming boxlike structure containing male genitalia. Valves of male genitalia variously modified, usually not simple, always with unique spinous thickened area, costal fold, toward tip and costal edge; hair pencil usually at base of valve although sometimes weak or absent; subscaphium usually present in anal tube, often modified, but sometimes weak or absent; uncus almost always strong, simple; juxta almost always with rounded depression at base; aedeagus and vesica variable, but often with cornutus toward base of vesica. Female genitalia variable; ostium usually large and modified, often with development of lip or lid, either externally or in ostium; ductus bursae variable, but usually sclerotized and ridged internally; star-shaped signum may or may not be present in bursae, if absent sometimes replaced by sclerotized knifelike projection or pleated plate; bursa sometimes minutely spined internally.

Larva.--Setal patterns as in figures 438-440; setal pattern of proleg of sixth abdominal segment characteristic of Pero and the Nacophorini.

Pupa.--Regularly punctate, with femur exposed, with callosity and dorsal and lateral grooves, but no phalange plates (Forbes, 1945).

Biology.--The biologies of the species of the genus are not well known. Only the life histories of a few North American species have been studied and these imperfectly. In the honestaria complex, the species feed on a wide variety of plant species--some on deciduous trees, others on conifers, and even a few on herbs, particularly legumes. There may be one or two generations per year in the North American species depending on the length of the summer. All larvae of the honestaria complex are stick mimics; they "stick out" rigidly from the branch or twig if disturbed. The biologies of species other than those in this complex are unknown. I tried to rear several species in Venezuela but was not able to find acceptable food plants for any of the larvae. This observation possibly indicates a higher degree of host plant specificity in the tropical species than in the honestaria group.

TYPES OF GENERIC NAMES

Pero has had many generic names proposed for groups of superficially similar species. Herrich-Schaeffer's generic names Pero and Pergama both appeared in "Systematische Bearbeitung der Schmetterlinge von Europa" in 1855. The generic name Pergama also was used in "Sammlung neuer, oder wenig bekannter, aussereuropäischer Schmetterlinge" in 1855. Because neither work can be dated more precisely, both must be considered as published on December 31, 1855, under the provisions of the International Code of Zoological Nomenclature. The generic name Pero did not appear in "Sammlung neuer, oder wenig bekannter, aussereuropäischer Schmetterlinge" until 1856. Since Pero and Pergama have the same date of publication, the correct generic name to use depends on the first reviser. The first one I have been able to find is Prout (1910b), who listed Pergama as a junior subjective synonym of Pero. Therefore, Pero is the applicable generic name. In Greek mythology, Pero is the daughter of Neleus and the wife of Bias and hence is feminine. Pergama is a form of Pergamum, the citadel of Troy and is neuter.

Although Guenée used Herrich-Schaeffer's specific names, he did not use his generic names. Guenée proposed Azelina for a large number of species of Pero, plus three species since transferred to other genera. The first type designation of Azelina was by Hulst (1896), but the type listed is not an included species and is a misidentification of a Geyer species of Noctuidae from southern Europe. However, Hulst synonymized hubnerata Guenée, an included species, with peplaria, the species he had designated as type. According to the rules of nomenclature, this may or may not be construed as the type. Fletcher (1979) listed hubnerata as type, and his decision is followed here.

Synemia Guenée is monotypic and isogenotypic with Pergama. Egabra certissima was described by Walker as a noctuid. Azelinopsis Warren is based on a mislabeled female listed in the description as from Queensland, Australia, although Warren recognized the species affinities with "Azelina," hence the name.

INTERGENERIC RELATIONSHIPS

Forbes (1948) created the tribe Azelini for the generic names Stenaspilates and Pero. The closest affinities of the Azelini are with the Nacophorini. The larvae of the Nacophorini and Azelini have a characteristic setal arrangement of the prolegs of the sixth abdominal segment (fig. 440), and this arrangement is not found elsewhere in the Geometridae to my knowledge. Forbes (1948) also noted a relationship between the two tribes in pupal structure. In tropical America, the Nacophorini include many large genera, such as Cidariophanes and Ischnopteryx, as well as several genera in Chile and Argentina. Despite the close affinities of the Nacophorini and Pero, the tribe Azelini is sufficiently distinct, I believe, to be treated as valid.

Possibly one or two of the more divergent sections of Pero may later be given generic names. The genus

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Dasystole and its closely related Chilean ally Salpis have a valve structure in the male genitalia similar to that found in the later sections of Pero, but these two genera also have two hooks near the juxta, a feature characteristic of the Nacophorini but not of the Azelini. Perhaps the most closely related genus is Nepitia Walker. It would seem to be almost intermediate between Dasystole and Pero. Several species of the genus Axiodes Warren from southern Africa have a spiny structure on the valve similar to the costal fold of Pero and are superficially somewhat similar as well.

SPECIES IDENTIFICATION

Identification of species in the genus Pero is difficult because of their large number, particularly if dissections of the male genitalia are not used. The only variable external characters known in Pero are wing shape and antennal structure, but neither is constant within groups. Pectinate and serrate antennae, for example, have arisen independently several times in the genus. Wing shape and maculation are particularly variable. I have found that constructing a key to species based on external appearance is impossible.

A key is given to species groups based on the male genitalia, but again the dividing lines between some of the groups are so equivocal that the key may not be entirely trustworthy. I have omitted keys to species within a group in most instances because matching the specimen or slide of the male genitalia to the illustrations is easier than trying to "run" it through a key. In closely related complexes of species, keys are based on superficial appearance, except when the species can be identified only by the male genitalia. Many of the characters in the keys to complexes are relative, and slides of the male genitalia must be used for positive identification. I have included these keys because they should enable a person to identify a species if one is able to recognize the complex involved.

The females have been slighted in the keys because female specimens of many of the species are lacking as well as consistent characters used to separate them into species groups. Females are best identified by association with males from the same locality.

KEY TO SPECIES GROUPS[3]

1. Juxta with pseudofurca (fig. 678); valve structure as in figure 678 2

   Juxta without pseudofurca; valve structure not as in figure 678 3

2. Pseudofurca rounded (fig. 678), not spiny, slender, or twisted ..... Group 7

   Pseudofurca not rounded, often spiny, slender, or twisted ..... Group 8

3. Juxta as in figure 693; valve structure as in figure 693 ..... Group 9

   Juxta not as in figure 693; valve structure not as in figure 693 4

4. Valve structure as in figures 607, 703, 782, 826; valve usually with distinct median process that may be either folded over or projecting 5

   Valve structure as in figures 444, 516, 536, 563; valve without median process 12

5. Eighth sternite as in figures 722, 750; costal fold usually elongate; ventral processlike structure at base of costal fold ..... Group 10

   Eighth sternite not as in figures 722, 750; costal fold rarely elongate; no ventral processlike structure at base of costal fold 6

6. Juxta as in figure 886; aedeagus as in figure 886a; median process not highly developed; uncus simple ... Group 17

   Juxta usually not as in figure 886; aedeagus variable; median process variable; uncus variable 7

7. Adults with appearance as in figures 350-363; aedeagus usually fairly simple; juxta usually large (fig. 811); uncus simple ..... Group 14

   Adults with appearance not as in figures 350-363; aedeagus usually not as simplified, often highly modified; juxta rarely as large as in figure 811; uncus variable 8

8. Vesica of aedeagus with group of long spines; other characters variable; appearance of adults as in figures 342-349 ..... Group 13

   Vesica of aedeagus without group of long spines (if present, short) 9

9. Median process of valve usually long, slender, basal in position (fig. 771); other characters variable; appearance of adults as in figures 323-341 ..... Group 12

   Median process, if modified or basal, not long and slender; appearance of adults not as above 10

10. Costa of valve serrate; uncus shaped as in figure 770; adults as in figure 322 ..... Group 11

    Costa of valve not serrate; uncus not as in figure 770; adults not as in figure 322 11

[3] Based on male genitalia.

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11. Adults yellow to yellow brown (figs. 406-411); forewing with variously colored band following postmedial line; wings elongate (fig. 409) .. Group 16

Adults not yellow or yellow brown; forewing above usually without band following postmedial line; wings not shaped as above ..... Group 15

12. Valve structure as in figure 917; palpi long, porrect; antennae pectinate; appearance of adults as in figure 434 ..... Group 18

Valve structure not as in figure 917; palpi usually not long, but short, upturned, 3d segment short; antennae not pectinate 13

13. Valve structure as in figure 606; 8th sternite usually modified as in figure 633, usually with 2 lateral strengthened areas; strong cornutus usually in vesica of aedeagus; valve usually with wide expanse of membrane following costal fold; juxta as in figures 608, 611 ..... Group 6

Valve structure not as above; 8th sternite rarely modified, if modified, without lateral strengthened ridges; cornutus sometimes present in vesica, but rarely, if ever, as strong as above; valve rarely with wide expanse of membrane following costal fold; juxta variable 14

14. Apices of valves usually with fingerlike projections (figs. 553, 563); valve structure as in figures 553, 563 .. Group 4

Apices of valves without fingerlike projections (figs. 511, 535); valve structure as in figures 444, 511, 535, usually simpler than in group 4 15

15. Costal fold not distinct; subscaphium distinctly shaped (fig. 918) ..... Group 19

Costal fold distinct; subscaphium variable 16

16. Discal dot of forewing above 8th note shaped (fig. 103); appearance of adults as in figures 103-125; ventral process of valve present, but always weak; costal projection present; juxta as in figures 535, 542 ..... Group 3

Discal dot not as above; appearance of adults not as above; ventral process of valve present or absent; costal projection present or absent; juxta variable 17

17. Ventral process of valve absent 18

Ventral process of valve present 19

18. Adults orange or yellow; wings elongate; appearance of adults as in figures 169-172; valve structure as in figure 590; costal projection absent ..... polygonaria and related species of group 5

Adults not orange or yellow; wings not elongate; appearance of adults variable, but not as in figures 169-172; valve structure as in figures 523-534; costal projection present ..... Group 2

19. Ventral process of valve single 20

Ventral process of valve bifurcate 22

20. Costal projection present .... First few species of group 1

Costal projection absent 21

21. Valve as in either figure 593 or 594; wing usually light gray; appearance of adults as in figures 173-176 .... pumaria, amanda of group 5

Valve various, not as in figure 593 or 594; wing rarely if ever light gray; appearance of adults not as in figures 173-176 ..... Middle species of group 1

22. Adults orange or yellow; appearance of adults as in figures 177-193; juxta as in figure 595 ....speciosata complex of group 5

Adults not orange or yellow; appearance of adults not as above; juxta variable..... End species of group 1

GROUP 1

Group 1 is characterized by a simple valve structure, the long costal fold, and a strong ventral process in the male genitalia. A signum is usually present in the bursa of the female genitalia, although in a few species (meskaria and the lustraria complex) the signum may be weak or absent. Usually a pouch of the ductus bursae is near the ostium. The shape of the ostium is variable.

The grouping may not be monophyletic. The last few species have the ventral process of the valve large and often bifurcate. Groups 2-5 are developments from group 1, but because of their considerable differences, they have been given group status. Group 1 contains some of the commonest and most geographically variable species in Pero. Many of the specific limits I have adopted are somewhat arbitrary and broad because of geographic variation. In most instances, I have tried to illustrate and interpret any variation in the male genitalia.

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Pero meskaria (Packard), NEW COMBINATION

Stenaspilates meskaria Packard, 1876:213, pl. 13, fig. 50.
Azelina albomacularia Henry Edwards, 1882:130.
Azelina arizonaria Henry Edwards, 1882:130.
Stenaspilates muricolor Hulst, 1896:379.
Stenaspilates albidula Hulst, 1900:107. NEW SYNONYMY.

Male (fig. 1).--Described from Arizona specimens. Antennae pectinate. Legs cream colored, spotted with brown. Forewing usually some shade of brown; basal area light tan to yellow brown, speckled with dark brown or black, particularly toward antemedial line; basal area lighter toward costa than at inner margin; antemedial line dark brown, weak or absent near costa; median area usually darker than either basal or subterminal areas, most often brown; discal dot large, white, usually elongated; discal cell lighter than remainder of median area; subterminal area followed by thin white line and brown band; brown band following postmedial line usually interrupted opposite discal cell and sometimes followed by light band; series of brown dots along outer margin. Hindwing dull white; postmedial line vague or absent toward costa; light brown to red-brown shade in anal angle; inner margin flecked with dark brown scales. Below most of maculation vague or absent; discal dot of hindwing large, brown; postmedial line of hindwing brown, dentate.

Male genitalia (figs. 443, 443a).--The two or three spines in the vesica of the aedeagus are characteristic of meskaria.

Female (fig. 2).--Antenna simple. Forewing similar to male, but dark flecking stronger, rougher.

Female genitalia (fig. 919).

Variation.--Male specimens of meskaria from Texas are usually smaller than those from Arizona, and the wings above are more uniformly colored. The band following the postmedial line of the forewing above is almost always weak in the Texas populations and the forewing is often olive colored. Females of meskaria from Texas are similar to the Arizona specimens. Some specimens from New Braunfels, Texas, are about one-half the size of those from Arizona. There is considerable color variation in the Texas specimens, but the median area of the forewing above is usually either tan or olive brown. The white line following the postmedial line of the forewing above may or may not be developed. A series of specimens from Mesilla Park, New Mexico, is light yellow and poorly marked. The median area in specimens from Fort Wingate, New Mexico, is concolorous with the basal and subterminal areas of the forewing, and the light line following the postmedial line is strongly developed. In Arizona, there is considerable variation, particularly in color, and although there is no clear-cut differentiation of forms, specimens can usually be characterized as either light or dark. The dark forms tend to be larger than the light ones, but again this is variable. California specimens are duller and more heavily flecked with brown than are either the Arizona or Texas specimens.

Types.--The type of meskaria is a male from "Texas" and if still in existence is probably in the Museum of Comparative Zoology, although I was not able to find it there. Azelina albomacularia was described from two males, now in the U.S. National Museum. The male bearing USNM type #34311 is designated the lectotype. The type of arizonaria is a female and is also in this museum. This specimen lacks its abdomen and hindwings. The type of muricolor is a male from San Antonio, Texas, and is in the American Museum of Natural History. Stenaspilates albidula was described from two specimens by Hulst, but the New Mexican specimen in the U.S. National Museum is listed as the type.

Food plant.--Reared from Clematis drummondii Torrie and Gray.

Discussion.--Pero meskaria is a common and variable species from drier areas of the Southwestern United States and Mexico. More than one species could be involved, but it is not likely. Despite its great variability, meskaria is distinctive.

Specimens examined.--265 males and 177 females, all year, commonest from June to August.[4]

MEXICO. Baja California: Guaycura Hotel Gromas, La Paz; Hidalgo: Ixmiquilpan; Nuevo León: Linares; Sonora: Navajoa; Tamaulipas: Matamoros. UNITED STATES. Texas.--Angelina: Zavalla, Neuces River; Bexar: Kanterberg, San Antonio; San Antonio; "Bexar Co.," reared from Clematis drummondi; "Bexar Co."; Brewster: Alpine; Big Bend National Park, Gov't Springs; Calhoun: Port la vaca; Cameron: Brownsville; Esper Ranch, Brownsville; St. Thomas, Brownsville; San Benito; Santo Rosa; Comal: New Braunfels; Duval and Jim Wells: San Diego; Fort Bend: Richmond, Brazos River; Hidalgo: Mercedes; Pharr; Karnes: Kenedy; Kleberg: Kingsville; Nueces: Corpus Christi; San Patricio: W.W.F. Refuge; Uvalde: Sabinal; Verde: Devil's River; Victoria: Victoria; Willacy: Raymondsville. New Mexico.--Chaves: Chaves; Dona Ana: Mesquite near Mesilla Park; Luna: Deming; McKinley: Fort Wingate. Arizona.--Cochise: Chiricahua Mtns.; Douglas; Palmerlee; Paradise; San Bernardino Rancho, 3750 ft.; Gila: Globe; Maricopa: Phoenix; Tempe; Wickenburg; Navajo: Shonte [Shonto?]; Pima: Alamo Canyon, Ajo Mtns.; Baboquivari Mtns.; Boyce Thompson Arboretum; Brown Canyon, Baboquivari Mtns.; El Mirador Ranch, 4 mi. N.W. Sasabe, Baboquivari Mtns.; Kitt's Peark, Baboquivari Mtns.; Madeira Canyon, Santa Rita Mtns.; N. side Kit's Peark, Baboquivari Mtns.; Organ Pipe Nat. Mon.; Savino Canyon, Santa Cataline Mtns.; Redington; Santa Catalina Mtns.; Tucson; 46 mi. E. Ajoa; Pinal: Aravaipa Canyon; not located: Black Dike Prospect, Sierratas; Catalina Spgs.; Coyote Mtns. Utah.--Sevier: Richfield; without definite locality: "Utah." Nevada.--Esmeralda: Esmeralda; Lander: Kingston Camp, 30 mi. S. Austin, 7300 ft.; Washoe: Reno; without definite locality: "S. Nevada." Colorado.--without definite locality: "colo." California.--Inyo: Olanca; Kern: Tehachapi;

[4] Throughout this bulletin, all information pertaining to distribution records is given essentially as it appeared on the insect labels.

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Los Angeles: Glendale; Palmdale; Monterrey: "Monterrey Co."; Riverside: Blythe; San Bernardino: 12 mi. S.E. Ivanpah; "San Bernardino Co."; not located: Argus Mtns.; Clark Mtns.; Ft. Yuma; Mint Canyon.

Pero astapa (Druce), NEW COMBINATION

Azelina astapa Druce, 1892:62, pl. 47, figs. 10, 11.
Stenaspilates egregiata Pearsall, 1906:218.

Male (fig. 3).--Antennae pectinate. Legs gray brown. Forewing basal area brown, slightly lighter along costa; antemedial line dark brown; median area light brown along costa, but outer fourth at costa dark brown; rusty-brown patch following discal dot; discal dot a white spot; subterminal area lighter than median area, apex slightly darker; two vague light bands in subterminal area. Hindwing brown, only postmedial line present. Below dull brown; postmedial line of forewing a straight brown line; discal dot of forewing a vague grayish rectangle; discal dot of hindwing a black spot divided into four quarters; inner half of subterminal area of hindwing browner, darker than outer half.

Male genitalia (figs. 444, 444a).

Female (figs. 4, 5).--Antenna simple. Forewing light orange brown usually; white band streaked with black following postmedial line.

Female genitalia (fig. 920).

Variation.--Males of astapa are not variable, but in females the white band following the postmedial line of the forewing above varies in strength. The females of astapa from the West Indies are similar to the males and lack a white band following the postmedial line. The single female from Venezuela is also similar to the males, but in this specimen the white band is present and well developed.

Types.--Druce described astapa from several specimens, but the male from "Presidio, Mexico," in the British Museum of Natural History is designated as the lectotype. The type of egregiata is a male from "Esper Ranch, Brownsville, Texas," and is in the U.S. National Museum.

Discussion.--Pero astapa is a common species of dry localities in Mexico, Central America, and northern Venezuela. It has also been collected in southern Texas. Populations of astapa occur in the West Indies, and although the West Indian specimens are different from the mainland ones in one or two superficial characters, the male and female genitalia indicate that they are this species.

Specimens examined.--94 males and 40 females, all year.

GRENADA. Balthazar; St. Andrews, 170 ft.; Grenada. ST. VINCENT. St. Vincent. TRINIDAD. Port of Spain. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Lara: El Cuji, 7 km. N. Barquisimeto. COSTA RICA. Cartago: San Jose. HONDURAS. San Pedro Sula. MEXICO. Chiapas: El Sapotal, 2 mi. S. Tex. Guitierrez; Santo Domingo, 15 mi. E.E. Simojorel; Guerrero: Iguala; near Chilpancingo, Rt. 195 km. 297; Michoacán: 16 mi. S. Artega, 800 ft.; Morelos: Cuernavaca; Nayarit: Tres Maria Island; San Luis Potosí: 25 mi. N. Tamazunchale, 400 ft.; Tabasco: Teapa; Tamaulipas: El Salto Falls, 26 mi. W. Antiguo Morelos, 2000 ft.; Veracruz: Coatepec; Cotaxtla Exp. Sta., Cotastla; Jalapa; Paso San Juan; Yucatan: Cichen Itza; not located: Presidio. UNITED STATES. Texas.--Cameron: Brownsville; Esper [Esperanza] Ranch, Brownsville; San Benito; Wildlife area, near Santa Rosa; Hidalgo: Mercedes; Pharr.

Pero radiosaria (Hulst), NEW COMBINATION

Azelina radiosaria Hulst, 1886a:206.
Pero muricolor Warren, 1900:222 (not Hulst, 1896). NEW SYNONYMY.
Azelina fulvata Warren, 1905a:65. NEW SYNONYMY.
Stenaspilates apapinaria Dyar, 1908:55. NEW SYNONYMY.
Stenaspilates metzaria Dyar, 1909:27.
Stenaspilates rectissima Dyar, 1910:263. NEW SYNONYMY.

Male (figs. 6, 7).--Antenna pectinate. Legs concolorous with wings. Forewing yellow, yellow brown, gray brown, or brown; entire wing usually concolorous, although outer one-fifth of median area sometimes slightly darker; antemedial line dark brown; discal dot a dull black spot, sometimes with vague white center; postmedial line sometimes followed by obscure light band; series of black dots along outer margin. Hindwing with postmedial line weak; discal dot a black spot; inner margin and inner half of outer margin slightly darker than remainder of wing. Below postmedial lines and discal dots of hindwing and forewing dark brown, contrasting with remainder of wings.

Male genitalia (figs. 445, 445a).

Female (fig. 8).--Antenna simple. Forewing similar to that of male, but usually darker and slightly more heavily flecked with brown scales.

Female genitalia (fig. 921).

Variation.--Pero radiosaria is a polymorphic species. The commonest color form is a light yellow brown, but brown, gray-brown, and orange-brown forms also occur. There is no clear-cut differentiation of forms and all possible shades between these color forms exist. The percentage of each form varies from locality to locality. The Colombian specimens are smoother appearing than those from either Mexico or the United States.

Types.--Hulst described radiosaria from "two males and one female, Ariz." The female is in the American Museum of Natural History and the two males in the U.S. National Museum. The male in the latter museum with Hulst's type label and with the male genitalia on slide Capps 574 is designated as the lectotype. The other male and female have lost their abdomens. The type of muricolor is a male from Popayán, Colombia. It is in the British Museum of Natural History. The type of fulvata is a female from Onca, Santa Marta, Colombia, and is also in the

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British Museum of Natural History. Dyar described apapinaria from four females from San Diego, California. A single female in the U.S. National Museum has the USNM type number 11699 and is designated the lectotype. This specimen bears only the type label. Stenaspilates metzaria was described from a single male from Claremont, California, which is in the U.S. National Museum. The female type of rectissima Dyar is from Orizaba, Mexico, and is also in this museum.

Larva.--See Comstock (1963).

Discussion.--In the United States, radiosaria is most common in dry localities and is not known to occur in forested areas. Although it is a variable species, it has a distinctive appearance and is easy to recognize.

Specimens examined.--141 males and 132 females, all year.

COLOMBIA. Boyacá: Muzo, 400-800 m.; Cauca: Popayan; Magdalena: Onca, St. Marta, 2000-2200 ft.; not located: Guabinas, Rio Cauca. GUATEMALA. Not located: Barberena. MEXICO. Baja California: Catavina; 11 mi. E. Ensenada; Rosarito; Santo Tomas; Sierra San Pedro Martin, 3000 ft., 4 mi. E. Meling Ranch; Hidalgo: 25 mi. W. Del Parrel, 6800 ft.; Mexico: Zacualpan; Morelos: Cuernavaca; Veracruz: Orizaba. UNITED STATES. Texas.--Brewster: Alpine; Dugout Wells, Big Bend Nat. Park; Cameron: Brownsville; San Benito; Culberson: Guadalupe Mtns., 5100 ft., McKittrick Canyon; Guadalupe Mtns., Pine Canyon, 5000 ft.; Davis: Ft. Davis. New Mexico.--Eddy: Carlsbad Caverns; Sitting Bull Falls, 42 mi. S.W. Carlsbad, 4800 ft. Arizona.--Pima: Catalina Mtns.; Organ Pipe Mon.; Redington; Santa Catalina Mtns.; Pinal: Oracle. California.--Los Angeles: Glendora; Claremont; Clear Creek Camp; Los Angeles; Santa Monica Mtns., 5 m. N. Beverly Hills, 1100 ft.; Santa Monica; Orange: Laguna Beach; Riverside: Alberhill; Bos Spring; Desert Center; Palm Springs; Riverside; West Riverside: Rancho la Sierra, Arlington; San Bernardino: Loma Linda; San Diego: Borrego; Agua Caliente; Gustay; Juliana; San Diego; Tub Canyon, Borrego; Santa Catalina: Central Valley; Santa Clara: Palo Alto; San Antonio, R.S.; not located: Duleura; Forest Home; Givilan; Morongo Valley; La Puerto; Wheeler Hot Springs.

Pero inviolata (Hulst), NEW COMBINATION

Stenaspilates inviolata Hulst, 1898:218.
Stenaspilates levisaria Grossbeck, 1909:196. NEW SYNONYMY.

Male (fig. 9).--Antenna pectinate. Legs light gray, spotted with gray. Forewing light gray with cream tinge, particularly in subterminal area; basal area light yellow gray, but heavily flecked with gray, not set off from median area; antemedial line strong only toward costa; median area yellowish along costa, otherwise yellow gray, darker along postmedial line; discal dot a black spot; inner half of subterminal area cream colored (usually), lighter than outer half; series of vague gray-brown spots along outer margin. Hindwing yellow gray to gray; postmedial line thin, gray brown, followed by a cream-colored band; anal angle with strong cream-colored tinge. Below dull white with brown flecking; postmedial lines of forewing and hindwing straight, dull white.

Male genitalia (figs. 446, 446a).--Characterized by shapes of costal fold and ventral process of valve.

Female (fig. 10).--Antenna simple. Forewing all light gray, without yellow or cream tinge; median area not yellow along costa; postmedial line dentate. Hindwing postmedial line weak.

Female genitalia (fig. 922).

Variation.--Some males of inviolata have a stronger yellow or tan tint than others, and some specimens are almost uniform gray. They vary greatly in size.

Types.--The type of inviolata is a very worn female from "Phoenix, Ariz.," in the American Museum of Natural History. Grossbeck described levisaria from two males. Neither was designated as the type in the description, but the specimen in the Grossbeck collection now in the American Museum of Natural History is marked as type and that in the Barnes collection, now at the U.S. National Museum, as cotype. The male in the American Museum of Natural History is designated as the lectotype. Both males are from the Santa Catalina Mountains in Arizona.

Discussion.--Although inviolata has been collected in both Arizona and California, it is most common in southern California. The soft gray to yellow-gray wings are characteristic of the species.

Specimens examined.--87 males and 119 females, February-August.

UNITED STATES. Arizona.--Cochise: Paradise; Maricopa: Phoenix; Mohave: Hualapai Mtns.; "Mohave Co."; Pima: Santa Catalina Mtns.; Tucson; Pinal: Oracle; Santa Cruz: Madeira Canyon, Santa Rita Mtns.; Yavapai: Mayer, 4300 ft.; Yuma: En route to Dewey and Salome; not located: Cibola; Coyote Mtns. California.--Imperial: San Felipe Hash; Riverside: Dead Indian Creek; Palm Springs; San Andreas Canyon; San Bernardino: Essex; San Bernardino; Split Rock Tank, Mojave Desert; San Diego: Borrego Desert Park; Borrego; Palm Canyon, Borrego; Split Mtn.; Tub Canyon, Borrego; not located: La Puerta Valley; Morongo Valley; Providence Mtns.; Shavier's Well; Walters Station; Indian Well.

Pero rava Poole, NEW SPECIES

Male (fig. 11).--Antenna pectinate. Legs dull gray brown. Forewing gray with slight brown tint when faded; median area slightly darker than either basal or subterminal areas; antemedial and postmedial lines straight, dull white; costa in basal and median areas lighter than remainder of these two parts of wing. Hindwing dull light gray; postmedial line dull, brown, shaded on outside with very dull white; discal dot a small obscure black spot; series of black dots along outer margin. Below dull gray brown; postmedial lines of forewing and hindwings brown, neither dentate nor wavy.

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Male genitalia (figs. 447, 447a).--Distinguishable from radiosaria by shapes of costal fold and ventral process of valve.

Female.--Unknown.

Type.--Holotype: Male, Bogotá, Colombia [Cundinamarca], 28-3200 m., in U.S. National Museum.

Discussion.--This species strongly resembles the gray form of radiosaria, but the shape of the antemedial line in the forewing above is different and there are several differences in the male genitalia, particularly the shape of the costal fold and ventral process of the valve.

Specimen examined.--1 male.

COLOMBIA. Cundinamarca: Bogota, 2800-3200 m.

Pero pima Poole, NEW SPECIES

Male (fig. 12).--Antenna pectinate. Legs dull light brown. Forewing brown; basal area light brown, slightly lighter than median area; antemedial line brown, weak toward costa; discal dot a round black circle; dark brown line in median area along postmedial line; subterminal area with fine, brown terminal line. Hindwing light brown; postmedial line brown, fine; wing flecked with brown scales along inner margin and in lower third of outer margin; discal dot a dull, black spot. Below dull light brown; discal dots of forewings and hindwings large black circles with dull white centers; all other maculation absent or obscure.

Male genitalia (figs. 448, 448a).--Characterized by shapes of costal fold and ventral process.

Female.--Unknown.

Types.--Holotype: Male, Baboquivari Mtns., Arizona, 10-30 Oct., in Cornell University collection. Paratype: A single male from the type locality, also in the Cornell University collection.

Discussion.--This species is known only from the two males. It is easily recognized by the large circular discal dots of the wings below.

Specimens examined.--2 males, October.

UNITED STATES. Arizona.--Pima: Baboquivari Mtns.

Pero aurunca (Druce), NEW COMBINATION

Azelina aurunca Druce, 1892:62, pl. 47, fig. 14.
Azelina metella Druce, 1892:62, pl. 47, fig. 13.
NEW SYNONYMY.

Male (fig. 13).--Palpi and legs dull brown. Forewing brown to dark brown; basal area brown; antemedial line shaded with dark brown along upper one-fourth; median area sometimes slightly darker than remainder of wing; discal dot a small, white, angulate line; median area yellowish between discal dot and angulation of postmedial line opposite discal dot; vague brown shade running length of median area from top of postmedial line to bottom; subterminal area mottled or uniform brown. Hindwing brown; subterminal area lighter along inner margin. Below subterminal areas of forewing and hindwing darker than remainder of wings; area between discal dot and postmedial line of forewing lighter than remainder of wing; discal dot of hindwing well developed; postmedial line brown and waved.

Male genitalia (figs. 449, 449a-c).--Shapes of juxta, uncus, and aedeagus will identify this species.

Female (fig. 14).--Similar to male, but usually not as strongly marked.

Female genitalia (fig. 923).

Variation.--Populations of aurunca from Costa Rica to Guatemala are similar except a male from Honduras, which is more like the populations found in Mexico and Panama. The Costa Rican-Guatemalan specimens are a dull, mat brown, but those from north and south of this area are more brightly marked and mottled. In the male genitalia, the costa is more strongly developed in the Costa Rican-Guatemalan specimens (fig. 449c) than in the Mexican or Panaman ones (fig. 449b). There are also smaller differences in the ventral processes of the valves, the aedeagus, and the eighth sternite of the male abdomen. The Panamanian specimens are very dark brown, but the Mexican ones are of the same shade of brown as the Guatemalan populations.

Types.--The type of aurunca is a male from Chiriqui, Panama, and is in the British Museum of Natural History. The type of metella is a female also from Chiriqui and also in this museum.

Discussion.--I have chosen aurunca as the name for this species over metella as first reviser, although metella appears before aurunca on page 62 of the "Biologia Centrali-Americana." I have done this because the type of aurunca is a male and is in much better condition than the female type of metella. Geographical variation in aurunca is disjunct, and the populations from Mexico, Honduras, and Panama are similar to each other both in maculation and in the male genitalia. However, they are isolated from each other by a race in the mountains of Costa Rica and Guatemala distinct both in the male genitalia and superficially. This could be the result of centrifugal speciation or perhaps two species are involved.

Specimens examined.--21 males and 11 females, February, March, and July.

MEXICO. Veracruz: Orizaba; Jalapa; "Vera Cruz." GUATEMALA. Izabal: Caygua; Quiriqua. HONDURAS. La Cambre. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; not located: Carillo; La Florida, 500 ft. PANAMA. Chiriqui: Boqueta, Chiriqui, 3500 ft.; Chiriqui; V. de Chiriqui, 4000 ft.; not located: Lino, 800 m.

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Pero punta Poole, NEW SPECIES

Male (fig. 15).--Palpi and legs gray brown, spotted with darker brown. Forewing soft gray brown; basal area light gray brown, spotted with dark brown, slightly darker toward base; median area gray brown, slightly yellowish between discal dot and postmedial line, and brownish along postmedial line; discal dot a white spot; postmedial line evenly curved, not jagged; subterminal area light gray brown, mottled with dark brown and black in two vague bands in middle, between postmedial line and outer margin. Hindwing brown; postmedial line brown, but obscure. Below light gray brown; postmedial line of forewing an even brown line; postmedial line of hindwing crenulate; discal dots of both wings well developed.

Male genitalia (figs. 450, 450a).--Almost identical to genitalia of preceding species, but with differences in aedeagus.

Female (fig. 16).--Forewing similar to that of male, but yellow in discal cell much stronger. Hindwing postmedial line and discal dot stronger than in male; anal angle slightly tinged with orange.

Female genitalia (fig. 924).

Types.--Holotype: Male, British Honduras, in British Museum of Natural History. Allotype: Female, Jalapa, Mexico [Veracruz], in U.S. National Museum.

Discussion.--The soft brown appearance of punta is characteristic. Although the male and female are from different localities, I am fairly certain that they are correctly associated. The male genitalia indicate a close relationship to aurunca, although superficially the two species are quite different.

Specimens examined.--1 male and 1 female.

MEXICO. Veracruz: Jalapa. BRITISH HONDURAS. "British Honduras."

Pero flavisaria (Grossbeck), NEW COMBINATION

Stenaspilates flavisaria Grossbeck, 1906:272.

Male (fig. 17).--Antennae pectinate. Legs dull white to cream. Forewing light yellow brown; basal area light yellow to cream, faintly speckled with tan scales; median area darker than either basal or subterminal areas, darker along postmedial line; discal dot a white spot, faintly circled with black; subterminal area lightest along postmedial line; subterminal area with faint light band running length of middle; upper half of subterminal area along outer margin darker than remainder of area. Hindwing light yellow to cream; postmedial line vague, formed of darker and lighter band; two black dots along outer margin; upper dot large. Below almost entirely dull yellow or cream, only postmedial lines present, but weak.

Male genitalia (figs. 451, 451a).--Characterized by shapes of ventral process and aedeagus.

Female (fig. 18).--Similar to male, but larger. Forewing with distinct gray-white band following postmedial line; outer half of subterminal area (particularly upper half) darker than inner half. Below postmedial lines of forewing and hindwing shaded with dark brown.

Female genitalia (fig. 930).

Variation.--The males of this species are not variable, but one male from Redington, Arizona, is gray, not yellow. The amount of brown flecking on the wings of the females is variable, and some females are heavily streaked with brown.

Type.--Grossbeck described flavisaria from 6 males and 13 females, but he stated that the type was in the Grossbeck collection. The male in the American Museum of Natural History marked "type male" is designated as the lectotype.

Discussion.--The male genitalia of flavisaria indicate a close relationship with zalissaria, although the two species are not similar superficially. The female of this species is most similar to the female of astapa.

Specimens examined.--34 males and 36 females, March-August.

MEXICO. Sonora: Copote Mine, 30 mi. E. Carbo. UNITED STATES. Arizona.--Cochise: Paradise; Pima: Alamo Canyon, Ajo Mountains; Baboquivari Mtns.; Brown's Canyon, Baboquivari Mtns.; Organ Pipe Cactus Mon.; Redington; Santa Catalina Mountains, mouth of Rock Canyon, 3000 ft.; Tucson; Pinal: Oracle; Pinal-Gila co. line, 4790 ft.; Yavapai: "Yavapai Co."; not located: Coyote Mtns.; Minnehaha.

Pero zalissaria (Walker), NEW COMBINATION

Azelina zalissaria Walker, 1860a:187.

Male (fig. 19).--Antenna pectinate. Legs dull light brown. Forewing brown; basal area concolorous with inner half of median area; antemedial line weak, dark brown; outer half of median area darker than inner half; discal dot a small black circle; postmedial line evenly incurved and often followed by dull white band. Hindwing dull light brown, darker along inner margin; discal dot a small black spot; postmedial line dark brown, weakly developed; series of black dots along outer margin. Below dull brown; discal dots of forewing and hindwing black circles; postmedial line of hindwing a thin, brown line.

Male genitalia (figs. 452, 452a).--Characterized by shapes of ventral process of valve and aedeagus.

Female (fig. 20).--Often similar to male, but some females lighter, and veins of forewing above accented with brown.

Female genitalia (fig. 929).

Type.--The type of zalissaria is a female from "east Florida" and is in the British Museum of Natural History.

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Discussion.--This species seems closely related to flavisaria.

Specimens examined.--19 males and 28 females, all year.

UNITED STATES. Florida.--Dade: Florida City; Inella: St. Petersburg; Keys: Paradise Key; Manatee: Gulf Coast Exp. Sta., Bradenton; Martin: Port Sewall; Nassau: Fernandina; Volusia: Ormond. Alabama.--Colbert: Wilson Dam; Elmore: "Elmore Co." Georgia.--Clarke: "Clarke Co."; Screven: "Screven Co."; not located: Newman. Mississippi.--Forrest: Camp Shelley, nr. Hattiesburg; Harrison: Biloxi; Handsboro; Hinds: Bolton; Clinton; Jackson; Madison: Ridgeland; Rankin: Pearl; Star; Warren: Vicksburg. North Carolina.--Not located: Leland. New Jersey.--Cape May: Cape May.

Pero uniformis (Warren)

Pergama uniformis Warren, 1897:500.

Male (fig. 21).--Dull green. Antenna pectinate. Legs brown, spotted with cream-colored scales. Forewing basal area green brown to dull brown; costal margin, particularly near antemedial line, cream colored; basal area not well set off from median area; median area slightly darker than basal area, its costal margin lighter; discal dot white, usually poorly developed, and not as evident as in next two species; subterminal area light along postmedial line, strongest along costa; two light bands in subterminal area, first running from postmedial line on costa to middle of outer margin, and second from middle of subterminal area to hindangle; these lines poorly developed and never as strong as in next two species. Hindwing dull white, scaled with dull brown; light along costa of wing; postmedial line of hindwing evenly rounded; discal dot of hindwing round, black, usually not as strong as in next two species; outer half of subterminal area of hindwing grayish.

Male genitalia (figs. 453, 453a).--Simple uncus and costa of valve will separate this species from next three.

Female (fig. 22).--Antenna simple. Forewing similar to that of male, but brownish, not greenish, usually lightly scaled with dull black; postmedial line black. Below also brown, not green.

Female genitalia (fig. 925).

Variation.--Although the markings of the subterminal area of uniformis are not conspicuous, they are variable. The ground color is also variable, and some specimens are browner than others.

Type.--Warren named uniformis from two specimens, one from "Sao Paulo" and the other from "Castro, Parana." Both are males and in the British Museum of Natural History. Warren's type label is on the São Paulo specimen, which is designated as lectotype.

Discussion.--Pero uniformis is much smoother appearing than any of the next three species, and the markings in the subterminal area of the forewing above are almost absent.

Specimens examined.--28 males and 10 females, all year.

BRAZIL. Minas Gerais: Vicosa; Paraná: Castro; Rio Grande do Sul: Pelotas; Santa Catarina: Blumenau; São Paulo: Sao Paulo. PARAGUAY. Paraguarí: Sapucay.

Pero lignata (Warren)

Pergama lignata Warren, 1897:499.

Male (fig. 23).--Forewing very similar to that of uniformis, but generally with maculation more distinct, not appearing "fuzzy" as in uniformis; basal area well set off from median area, usually not marked with clay-colored scales along costa (specimens from Argentina are an exception); discal dot larger than in uniformis; median area not distinctly marked with clay-colored scales along costa, although costa lighter than remainder of median area; subterminal area with two well-marked light bands, almost always better developed than in uniformis; postmedial line not followed by light area as in uniformis. Hindwing darker and more uniform than in uniformis, not significantly lighter along costal margin; discal dot usually present. Below similar to uniformis, but maculation stronger, particularly discal dot of forewing; not as darkly scaled.

Male genitalia (figs. 454, 454a).--Shape of uncus will distinguish this species from uniformis and lack of spikes on shaft of aedeagus and shapes of subscaphium and uncus from afuera.

Female (fig. 24).--Forewing differing from that of uniformis in having veins marked with dark brown; patch of dark scales in indentation of postmedial line; maculation clearer and not as heavily flecked with dark scales as in uniformis.

Female genitalia (fig. 926).

Variation.--The markings of this species seem to be moderately consistent, but the color varies from brown to almost olive green, with all shades in between. Specimens from Argentina are dark olive green and have a "fuzzier" appearance.

Type.--Pergama lignata was described from "a pair from Palma Sola," which is in Venezuela, and a female from "Fort St. George, Trinidad." The male from Palma Sola with Warren's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--Pero lignata is one of the commonest and most widespread species of Pero in tropical America. It probably occurs most commonly in secondary growth at lower elevations. I did not collect this species at Rancho Grande, Venezuela, which is montane cloud forest.

This species and afuera are similar and often difficult to distinguish. Pero afuera is usually slightly larger, greener, and the veins of the

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forewing are distinctly darker than the remainder of the wing. My general impression is that only one of the two species occurs in any given locality.

Specimens examined.--295 males and 42 females, all year.

MEXICO. Tabasco: Tabasco. BRITISH HONDURAS. Middlesex, Stann Creek District; Punta Gorda; Rio Grande; Rio Temas; "Brit. Honduras." GUATEMALA. Izabal: Cayuga; Quirigua; Quezaltenango: Cerro Zunil, 400 ft.; Sololá: V. de Atitlan, 25-2500 ft. COSTA RICA. Cartago: Banana River; Orosi, 1200 m.; Limón: Sixoala River; not located: Esperanza; Hamburg Farm; no specific locality: Costa Rica. PANAMA. Chiriqui: Chiriqui; Panama: La Chorrera; not located: Rio Trinidad; no specific locality: Panama. VENEZUELA. Bolívar: La Union, Caura River; La Vuelta, Caura River; Carabobo: San Esteban Valley, Las Quigas; Valencia; Yaracuy: Aroa; Palma Sola. TRINIDAD. Belmont, Pt. of Spain; Caparo. GUYANA. Bartica; Fort Akayma, Rio Demarara; Rio Potaro; Tumatumari; Tumatumari, Potaro River; Rockstone, Essequibo. FRENCH GUIANA. Cayenne; St. Laurent, Maroni; St. Jean, Maroni. BRAZIL. Amazonas: Fonte Boa; Manaos, to Yutahi River; Bahia: Cachimbo; Minas Gerais: Uberaba; Vicosa; Pará: "Para"; Paraná: Castro, 950 m.; Pernambuco: Serra de Bernada; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Laguna de Sacuresma; Organ Mtns., near Tijuca; Rio Grande do Sul: Pelotas; Rio Grande do Sul; Santa Catarina: Blumenau; Jaragua do Sul; Iguassu, Parana; Hansa Humboldt; Hills between Hansa and Jaragua, 400 m.; Nova Bremen, 250 m.; Nova Bremen; Rio Laeiss, Neu Bremen; "Santa Catarina"; São Paulo: Alto da Serra, Santos, 800 m.; Matto do Governo. PARAGUAY. Paraguarí: Sapucay. ARGENTINA. Buenos Aires: Benos Aires; Vinciente Lopez; Jujuy: Jujuy; La Rioja: La Rioja; Misiones: Hauz Parana, San Ignacio; Posadas; Tucumán: Tucuman, 450 m.; Tucuman; not located: Los Vasques. BOLIVIA. Cochabamba: Charaplaya, 1300 m., 65° W, 16° S; Charuplaya; Rio Chapare; Yunga del Espiritu Santo; Santa Cruz: Mutum, 20 mi. W. Porto Suarez, 1500 ft.; Santiago de Chiquitos; not located: Corvico, 1800 m. PERU. Amazonas: Huambo; Chachapoyas; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo, 1000 m.; La Merced, Chanchamayo; Pasco: Oxapampa; Puno: La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft.; not located: Chaquimayo, 2000-3000 ft.; no specific locality: Peru [probably in Amazonas]. ECUADOR. Loja: Environs de Loja; Napo-Pastaza: Naranjapata, 1850 ft.; Sarayacu; Zamora: Palanda; Zamora. COLOMBIA. Boyacá: Muzo; Vaupés: Ob. Rio Negro, 800 m.

Pero afuera Poole, NEW SPECIES

Male (fig. 25).--Forewing almost identical to that of preceding species, but usually deeper olive color; veins often marked with brown. Hindwing subterminal area in anal angle often marked with yellow or orange, lighter than in lignata. Below similar to lignata.

Male genitalia (figs. 455, 455a).--Pero afuera can be separated from lignata by spikes on shaft of aedeagus. Uncus is longer and not as broad at tip as in lignata, and costal process of left valve is blunter.

Female (fig. 26).--Identical with lignata.

Female genitalia (fig. 927).

Variation.--The afuera males vary from uniform olive to brown. The darkness and distinctness of the veins of the forewing are also variable.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], Aragua, Venezuela, 1100 meters, R.W. Poole, August 3, 1967, in U.S. National Museum. Paratypes: June to September 1967, from type locality, 1 male each in American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology, and Universidad Central de Venezuela; 4 males from type locality in U.S. National Museum.

Discussion.--Pero afuera is often difficult to distinguish from the preceding species. The shape of the uncus can be used to separate the two if the male genitalia are protruding from the abdomen, but because there is some variation in the uncus of both species, this character must be used with care.

Because of the similarity between afuera and lignata, the type series has been restricted to the type locality.

Specimens examined.--47 males and 13 females, all year.

MEXICO. Chiapas: La Granja; Santa Anita; Chiapas; Guerrero: Coatepec; Morelos: Cuernavaca; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; San Luis Potosí: 2 mi. N. Tamazunchale, 400 ft.; Veracruz: Orizaba. GUATEMALA. Alta Verapaz: Baleu, Municipio Cristobal, Verapaz; Baja Verapaz: Chejel; Sololá: Olas de Moka, 3000 ft. COSTA RICA. Cartago: Juan Vinas; San Jose; Puntarenas: Puntarenas, Monteverde, 4600 ft.; not located: Avangarez; no specific locality: Costa Rica. PANAMA. Chiriqui: V. de Chiriqui, 2-3000 ft. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley; Yaracuy: Aroa. COLOMBIA. Magdalena: Onca, St. Marta, 2200 ft.; Vaupés: Ob. Rio Negro, 800 m.

Pero obscurior Poole, NEW SPECIES

Pergama lignata ab obscurior Warren, 1897:499.

Male (fig. 27).--Forewing similar to that of preceding species, but darker brown; maculation as in lignata, but not quite as well marked. Hindwing dark brown with lower one third of subterminal area light brown. Below browner than any of preceding three species.

Male genitalia (figs. 456, 456a).--Shape of uncus will separate this species from any of preceding three.

Female (fig. 28).--Similar to female of lignata, but darker.

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Female genitalia (fig. 928).

Type.--Holotype: Male, Popayán, [Cauca], Colombia, in British Museum of Natural History. Holotype is male type of Warren's aberration obscurior. The type series is hereby restricted to the type locality.

Discussion.--This species is closely related to lignata and is possibly only a race, but the differences in the male genitalia between it and lignata are as great as the differences between lignata and afrera. There also seems to be some overlap in the ranges of lignata and obscurior.

Specimens examined.--44 males and 9 females, June and July.

COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Cauca: Juntas; Popayan; Choco: El Tigre, Rio Tamaua, 320 ft.; Cundinamarca: Canache; Guadalite; La Palma; Sante-Fe do Bogota; Valle del Cauca: Narangito, Rio Dagua, 3900 ft.; R. Dagua. ECUADOR. Bolivar: Balzapamba; La Chima, Rio de Corondalet; Pambilar; R. Cayapas; R. Durango; S. Javier, R. Cachabi, 60 ft.; Los Rios: Quevedo; not located: San Eduardo.

Pero nata Poole, NEW SPECIES

Male (fig. 29).--Brown. Palpi and legs brown with tarsi vaguely marked with cream-colored scales. Forewing basal area brown, lighter only along antemedial line at costa; median area brown, lighter along inner margin, darker along postmedial line; discal dot white, circular; postmedial line followed by light gray near costa and slightly so for remainder of its length; subterminal area brown with two light brown streaks, one running from middle of subterminal area toward hindangle and other from top of postmedial line to middle of outer margin. Hindwing brown with dull, light postmedial line; anal angle slightly lighter brown; series of black dots in anal angle along outer margin. Below forewing brown except outer half of subterminal area; subterminal area gray except brown patch in upper one-half along outer margin; postmedial line straight, dull white edged inwardly with brown; hindwing brown, dark scales on light ones; postmedial line crenulate and cream-colored; subterminal area gray in upper and outer halves; discal dot present, black, but vague.

Male genitalia (figs. 457, 457a).--Shape of uncus will identify this species.

Female.--Unknown.

Variation.--Little if any.

Types.--Holotype: Male, São Paulo de Olivença, Amazonas, Brazil, Novembre-Decembre, Fassl, in U.S. National Museum. Paratypes: Fonte Boa, Upper Amazon [Brazil], VIII-IX, Klages, 6 males in British Museum of Natural History; Santo Antonio do Javary, Upper Amazon [Brazil], VI, Klages, 1 male in British Museum of Natural History; 7 males from type locality in U.S. National Museum.

Discussion.--This species is distinct from any other in this group.

Specimens examined.--15 males, June-December.

BRAZIL. Amazonas: Fonte Boa, Upper Amazon; Santo Antonio do Javary, Upper Amazon; Sao Paulo de Olivença.

Pero minetraria (Oberthür), NEW COMBINATION

Azelina minetraria Oberthür, 1912:297, fig. 1546.

Male (fig. 30).--Forewing brown; basal area light brown, heavily scaled with brown, only slightly lighter than median area; basal area lighter on costa; median area brown, lighter toward costa, darker toward costa, darker toward postmedial line; discal dot a round white spot; postmedial line even, not waved; subterminal area white along postmedial line; two brown blotches on outer half of this white band. Hindwing white, finely speckled with few brown scales, but all other maculation absent.

Male genitalia (figs. 458, 458a).--Valve and uncus are characteristic of this species.

Female.--Unknown.

Type.--Oberthür described this species from a single male from "Matto Grosso," Brazil, and it is now in the British Museum of Natural History.

Discussion.--This is a distinctive species and can be confused with nothing else in the genus.

Specimens examined.--2 males.

BRAZIL. Matto Grosso: "Matto Grosso." MISLABELED. Sierra Leone.

Pero nyctops Prout

Pero nyctops Prout, 1934:116.

Male (fig. 31).--Antenna pectinate. Legs with tibiae tipped with white. Forewing maculation dark; basal area not well set off from median area; discal dot white, vaguely outlined with black; subterminal area lighter than median area, almost contrasting with remainder of wing; series of black dots along outer margin, but strongly developed only toward apex. Hindwing smoky black, only maculation a set of conspicuous black dots along outer margin. Below smoky black; only apparent markings discal dots of hindwings.

Male genitalia (figs. 459, 459a).--Shapes of subscaphium and costal fold are very characteristic of this species.

Female.--Similar to male, but slightly larger and usually slightly browner.

Female genitalia (fig. 931).

Variation.--Some specimens of nyctops are browner than others, although most are almost entirely

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black. Coloration seems to depend on both the specimen and how much it has faded.

Type.--Prout named nyctopa from "British Honduras, Punta Gorda (loc. cit.), 2 males, 2 females." The male specimen with Prout's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--Pero nyctopa is a distinctive, all black species. At present, it is known only from British Honduras. I have not been able to place it with any certainty in the classification although I think it belongs to group 1. The pattern of the forewing is hardly characteristic of this species group.

Specimens examined.--29 males and 30 females, all year.

BRITISH HONDURAS. Columbia; Punta Gorda; Rio Grande; Rio Temash.

Pero pelota Poole, NEW SPECIES

Male (fig. 32).--Head and thorax black brown. Legs black brown, heavily marked with cream-colored scales, particularly tips of tibiae and tarsi. Forewing basal area light brown to brown, scaled with smoky brown; antemedial line black; median area dark brown to black brown, usually contrasting with basal and subterminal areas; discal dot white, small; subterminal area light brown to brown, variegated with dark brown, particularly as a darker band following postmedial line in angulation of line in middle of wing; apex darker than remainder of subterminal area, with one or two white dots in it. Hindwing smoky brown to black, maculation obscure; darker specimens usually striate with cream-colored scales; postmedial line black, fine, usually followed in anal angle by lighter band and then black band; series of black dots along outer margin, particularly well developed at anal angle, but weak to absent toward inner margin. Below brown with slight purple tinge, postmedial lines of forewing and hindwing black and well marked, although not conspicuous, discal dot of forewing white and circular, of hindwing also circular, but mostly black except center; postmedial line of hindwing followed in anal angle by white and then black.

Male genitalia (figs. 460, 460a).--Easily identified by shapes of costal fold and ventral process of valve.

Female (fig. 33).--Forewing browner, not jet black as in male; maculation often somewhat different than in male (see fig. 33) and with conspicuous black band preceding postmedial line in median area. Hindwing brown without striations of male. Below similar to male.

Female genitalia (fig. 932).

Variation.--The amount of striation of white and black in the males is variable, with great contrast to almost none. This variation takes the form of the median area of the forewing either contrasting or not contrasting with the subterminal and basal areas. In the females the distinctness of the lines of the forewing varies from moderate to sharp and contrasting.

Types.--Holotype: Male, Pelotas, Rio Grande do Sul, Brazil, C.M. de Biezanko, May 1, 1958, in Museum of Comparative Zoology, Harvard University. Allotype: Female from type locality, March 18, 1953, in Cornell University collection. Paratypes: From type locality June through November, 9 males in Cornell University collection, 4 males in Museum of Comparative Zoology.

Discussion.--The placement of this species is only tentative. It is superficially similar to the anceta species complex, but the female genitalia are different from the genitalia of that complex, and there are also differences in the aedeagus and vesica of the male genitalia.

Specimens examined.--18 males and 7 females, all year.

BRAZIL. Rio Grande do Sul: Pelotas. URUGUAY. Montevideo: Montevideo; Saygo, Montevideo; not located: Aotres Cruces. ARGENTINA. Entre Ríos: La Soledad.

Pero sprata Poole, NEW SPECIES

Male (fig. 34).--Antennae strongly serrate. Legs with outer face brown, inner face dull white. Forewing dark brown; basal area light brown, not clearly separated from median area at costa; antemedial line with two strong teeth, slanting inward to inner margin; median area dark brown; outer one-third darker than inner two-thirds; discal dot a white spot; subterminal area light near postmedial line, white along it; outer half of subterminal area darker than inner half. Hindwing dull white, flecked with brown scales; postmedial line vague, brown, dentate. Below dull white, heavily flecked with brown; all maculation very obscure; discal dot and postmedial line of hindwing present, but vague.

Male genitalia (figs. 461, 461a).

Female.--Similar to male, but slightly larger.

Female genitalia (fig. 933).

Types.--Holotype: Male, Tucumán, 450 m., April 1919, Argentina, in British Museum of Natural History. Allotype: Female, from type locality, also in British Museum of Natural History.

Discussion.--The appearance of this species is characteristic and not at all like the preceding species. However, the male genitalia of this species and of pelota are very similar, almost identical. Pero sprata is known only from the type locality.

Specimens examined.--1 male and 1 female, April and May.

ARGENTINA. Tucumán: Tucuman, 450 m.

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anceta Species Complex

The anceta complex is one of the more troublesome in the genus. It includes the species chapela through orosata. There are seven known species, most of which are difficult to separate on superficial appearance, although the male genitalia are distinctive. It is particularly difficult to distinguish the species when they have faded. A key to males is given based on general appearance, but it is not infallible and should be used with caution. Genitalic characters are much more reliable. Possibly biological characteristics will eventually be of value in working out this complex more satisfactorily.

I have been unable to separate females of anceta, jimenezaria, pequena, chapela, or orosata, either superficially or by genitalia. There are extremely variable differences in the female genitalia, and what is characteristic of one species at one locality is characteristic of another somewhere else. If a series of specimens is available from a locality, there is usually no problem in associating males and females.

The largest number of species occur in southern Central America, with fewer in Brazil and the Andes. The southern limit of the group is Paraguay.

The following key to males is based on maculation.

1. Subterminal area yellow to orange yellow; median area blue gray .... teleclyta

   Subterminal area some shade of brown, can be light tan, but not yellow; median area usually brown black to black when fresh 2

2. Last abdominal tergite folded over tip of abdomen like box cover, giving tip of abdomen a "squared" appearance.... ..... jimenezaria

   Last abdominal tergite not so modified 3

3. Basal area of forewing bluish gray except yellow-orange bottom one-fifth; subterminal area bright light brown .. yahua

   Basal area of forewing some shade of light brown; subterminal area brown 4

4. Subterminal area of forewing below with white spot in brown upper half of area 5

   White spots in subterminal area of forewing below, if present, continuous with whitish inner margin 6

5. Uncus as seen by brushing away scales from tip of abdomen long, slender, and wide at base; median process of valve short; subscaphium squared at tip; hindwing below smooth, dark purple brown ..... orosata

   Uncus short; median process of valve long; subscaphium pointed at tip; hindwing below mottled purple brown ..... chapela

6. Lower half of subterminal area of forewing above with 2 white blotches ..... anceta

   Lower half of subterminal area of forewing above without these 2 white blotches ..... pequena

Pero chapela Poole, NEW SPECIES

Male (fig. 35).--Palpi purple brown, tip of third segment white. Legs purple brown marked with cream color. Thorax purple brown. Forewing basal area light dull brown, flecked with purple-brown scales; antemedial line black; median area purple brown, contrasting with basal and subterminal areas; discal dot small, white; light violet spot in discal cell between R_4 and R_5; subterminal area dull light brown, streaked with dark scaling, and vaguely variegated with light and dark areas toward middle of postmedial line; apex dark purple brown. Hindwing dark gray brown, with dull light brown postmedial line; patch in anal angle also dull light brown. Below dark purple brown; discal dot of forewing a white line; postmedial line straight, white, and interrupted; white patch in lower half of subterminal area; discal dot of hindwing black in white area, divided into four sections; postmedial line in anal angle white edged with black. Abdomen light purple brown.

Male genitalia (figs. 462, 462a).--Characterized by shape of subscaphium and length of costal fold.

Female (fig. 36).--Forewing maculation as in male, but larger and all brown, not purple brown; outer one-fourth of median area darker than inner three-fourths; dark line in subterminal area running alongside postmedial line; black blotch between middle indentation of postmedial line and dark band; inner edge of dark patch on apex black.

Female genitalia (fig. 934).

Variation.--In populations of chapela from South America, the subscaphium loses the side projections present in the Central American specimens and terminates in a single point. A specimen from Amazonas, Brazil, is brighter than normal and appears superficially closer to anceta than to this species. One specimen from Bolivia is almost rusty brown and not purple brown, and a male from Rancho Grande, Venezuela, is almost uniform dark brown. The series of females from San Esteban Valley, Venezuela, are very uniform brown, without any clear maculation.

Types.--Holotype: Male, Cayuga, [Isabal], Guatemala, May, Schaus and Barnes, in U.S. National Museum. Allotype: Female, Barro Colorado Island, Canal Zone, Panama, July 5, 1940, in Museum of Comparative Zoology, Harvard University. Paratypes: 10 males from type locality in U.S. National Museum.

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Discussion.--Most known specimens of chapela are from Central America and northern Venezuela.

Specimens examined.--79 males and 32 females, May-December, most common in July and August.

BRITISH HONURAS. Middlesex, Stann Creek District. GUATEMALA. Izabal: Cayuga. COSTA RICA. Not located: Sixola River. PANAMA. Canal Zone: Barro Colorado Island. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Yaracuy: Palma Sola; not located: Las Cruces, Colon, 250-750 ft. FRENCH GUIANA. St. Jean, Maroni; St. Laurent. SURINAM. Moengo, Boven Cottica R. BRAZIL. Amazonas: Fonte Boa; Sao Paulo de Olivenca; Pará: Para; Rio de Janeiro: Petropolis; Santa Catarina: Neu Bremen, Rio Laeiss; no specific locality: Brazil. BOLIVIA. Santa Cruz: Buenavista; Nuflo de Chavez, Esperanza; Rio Suruta, 400 m.; Santiago del Estero. PERU. Junin: Satipo; Puno: Yahuarmayo, 1200 ft. ECUADOR. Napo-Pastaza: Coca, Upper R. Napa; Sarayacu. COLOMBIA. Boyacá: Muzo, 400-800 m.; Magdalena: Rio Magdalena a Bogota; Vaupés: Ob. Rio Negro, 800 m.

Pero anceta (Stoll)

Phalaena Geometra anceta Stoll, in Cramer, 1782:136, pl. 360, figs. C, D.
Azelina ancetaria Guenée, 1857:158. [Unjustified emendation.]

Male (fig. 37).--Forewing similar to that of chapela; two bright white patches in lower third of subterminal area. Below white blotch of subterminal area of forewing taking up entire bottom half of area.

Male genitalia (figs. 463, 463a).--Characterized by shapes of costal fold, ventral process, and subscaphium.

Female.--Identical with female of chapela.

Female genitalia.--Identical with genitalia of chapela.

Variation.--The amount of white in the subterminal area of the forewing above varies from specimen to specimen and is not always an accurate indicator of the species. The specimens from Guatemala are the most strongly marked of any population.

Type.--Based on a female, probably from Surinam. I have not seen the type and it has probably been destroyed.

Discussion.--This name was wrongly applied for some time to the common North American species, honestaria, although there is little resemblance between it and the illustration given in Cramer. Because the type of anceta is a female, I cannot be sure what species it is in this complex, and I have used it somewhat arbitrarily for this species, which occurs commonly in the Guianas. I do not have any specimens of anceta from Surinam. It is most common in Central America and northern Venezuela to the Guianas, but it occurs also in Brazil and the Andes.

Specimens examined.--104 males and 3 females, all year.

GUATEMALA. Baja Verapaz: Chejel; Izabal: Cayuga. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas. GUYANA. Potaro. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni; "French Guiana." BRAZIL. Amazonas: Tonantins; Sao Paulo de Olivenca; Matto Grosso: Matto Grosso; Pará: R. Madeira; Para; Paraná: Castro, 950 m.; Salto Grande; Rio Grande do Sul: Guarani; Rondonia: Calama, R. Madeira below R. Machados; Santa Catarina: Iguassu, Parana; Neuvo Teutonia; São Paulo: Sao Paulo. PARAGUAY. Guairá: Independencia; Itape; Paraguarí: Sapucay; no specific locality: Paraguay. BOLIVIA. Santa Cruz: Nuflo de Chavez, Esperanza; Rio Aniser, Chiquitos, 600 m.; Rio Suruta, 400 m. PERU. Junin: Chanchamayo, 1000 m.; Loreto: Rio Ucayali; Piura: Quiroz; no specific locality: No. Amazon; Peru. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Santander: Cucuta; Vaupés: Ob. Rio Negro, 800 m.; not located: Medina, 500 m.; no specific locality: Colombia. TRINIDAD. Arima Valley, 800-1200 ft.

Pero teleclyta Prout

Pero teleclyta Prout, 1928:62.

Male (fig. 38).--Thorax grayer than in chapela. Forewing maculation as in chapela; basal area light yellow brown, not dull brown, but scaled with purple brown toward base; median area purple gray, slightly lighter than in chapela; outer one-fifth of median area darker than inner four-fifths; subterminal area yellow brown, variegated with dark and light patches, darkest along postmedial line; apex purple gray. Hindwing patch in anal angle light yellow. Below entire lower half of subterminal area of forewing cream white, white extending inward on inner margin.

Male genitalia (figs. 464, 464a).--Shape of subscaphium is characteristic of this species.

Female (fig. 39).--Forewing similar to that of chapela female, but darker, with slight purple appearance; subterminal area strongly variegated with black; black line running along postmedial line; blackish brown between this band and postmedial line.

Female genitalia.--Similar to genitalia of chapela.

Variation.--The basal and subterminal areas of the forewing of teleclyta tend to be yellow orange in the populations from Venezuela, but light yellow in specimens from Brazil and Peru. Females of teleclyta from southern Brazil have the male coloration and are not brown like the Guyanese and Venezuelan specimens. However, the one female from Paraguay is brown and is not like the Brazilian population.

Type.--Prout named this species from a series from San Esteban Valley, Venezuela. The male bearing his type label in the British Museum of Natural History is designated as the lectotype.

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Discussion.--The distribution of this species appears to be very spotty with a large number of specimens from the San Esteban Valley in Venezuela and another moderate series from Satipo, Peru. The loss of sexual dimorphism in the southern Brazil populations is interesting, but I have no idea why it should be lost there, but retained in Paraguay.

Specimens examined.--67 males and 5 females, April-December.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas. GUYANA. Tumatumari. BRAZIL. Santa Catarina: Blumenau; Jaragua do Sul; Joinville; Rio Laeiss, Blumenau; Nova Bremen, 850 m. PARAGUAY. Paraguarí: Sapucay. PERU. Huánuco: Tingo Maria, Rio Huallaga; Junin: Satipo; Loreto: Coytamana, Rio Ucayali; Puno: Chaquimayo, 2500-3000 ft.; La Union, R. Huacamayo, 2000 ft. COLOMBIA. Magdalena: Onca, St. Marta; Vaupés: Ob. Rio Negro, 800 m.

Pero yahua Poole, NEW SPECIES

Male (figs. 40, 41).--Forewing basal area gray in upper four-fifths, orange in lower fifth; median area with distal half noticeably darker than proximal half; subterminal area tan. Hindwing gray, not mottled; light patch on postmedial line in anal angle well developed, rusty orange. Below wings tinted with rusty orange in places; white patch in subterminal area of forewing small, occupying only one-fifth of area.

Male genitalia (figs. 465, 465a).--Characterized by shape of subscaphium and wide base of gnathos.

Female (fig. 42).--Similar to male, but slightly duller.

Female genitalia.--Similar to genitalia of chapela.

Variation.--The five males of yahua from Pará, Brazil, are smaller than the Peruvian specimens. The median area of the forewing above in these Pará specimens is light blue gray and the subterminal area lighter brown than in the Peruvian specimens.

Types.--Holotype: Male, Yahuarmayo, [Puno], Peru, 1200 ft., February and March, Ockenden, in British Museum of Natural History. Paratypes: 2 males from type locality in British Museum of Natural History, 1 male in collection of Cornell University; 1 male from San Gabon, Peru, 2500 ft., in British Museum of Natural History.

Discussion.--Pero yahua is known only from a few specimens from southern Peru and the series from Pará. The Pará specimens are smaller than those from Peru and have the median area light blue gray. Superficially these two populations are different, but the genitalia are identical.

Specimens examined.--11 males and 1 female, all year.

PERU. Puno: San Gabon, 2500 ft.; Yahuarmayo, 1200 ft.; no specific locality: Peru. BRAZIL. Pará: Para. GUYANA. British Guiana.

Pero pequena Poole, NEW SPECIES

Male (fig. 43).--Almost identical with chapela, but smaller and browner; subterminal area not as variegated as in chapela. Below entire bottom half of subterminal area of forewing white.

Male genitalia (figs. 466, 466a).--Characterized by thick ventral process and shape of subscaphium.

Female.--Identical with female of chapela, but slightly smaller.

Female genitalia.--Identical with chapela.

Types.--Holotype: Male, Misantla, [Veracruz], Mexico, May 1909, R. Muller, in U.S. National Museum. Paratypes: 1 male from type locality in British Museum of Natural History; 1 male from Orizaba, Veracruz, Mexico, in U.S. National Museum; 1 male from Jalapa, Veracruz, Mexico, in British Museum of Natural History.

Discussion.--Pero pequena is known only from the State of Veracruz, Mexico. The females are only doubtfully associated with the males and I have not included them in the type series. Pero pequena is browner and smaller than any other member of this species complex and this, in addition to the locality, should identify the species.

Specimens examined.--4 males and 2 females, May.

MEXICO. Veracruz: Jalapa; Misantla; Orizaba.

Pero jimenezaria (Dognin)

Azelina jimenezaria Dognin, 1890:193.

Male (fig. 44).--Forewing superficially identical to that of chapela. Abdomen box shaped, eighth tergite forming a "lid."

Male genitalia (figs. 467, 467a).--Characterized by shapes of gnathos and subscaphium.

Male eighth sternite and tergite (figs. 467b-c).

Female.--Identical with chapela.

Female genitalia.--Identical with genitalia of chapela.

Variation.--This species seems to be almost without variation between localities or within a single locality. Three specimens from Dos Puentes, Ecuador, have the end of the abdomen slightly less developed than the other specimens.

Type.--Dognin described jimenezaria from a single male from "Environs de Loja, Equateur," and it is now in the U.S. National Museum.

Discussion.--The modification of the eighth abdominal sternite and tergite of the male is characteristic of jimenezaria, but the reasons for this modification are not known. It is possibly a reiteration of the tendency in some other groups of Pero for the last segment of the abdomen to form a

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large box to hold the male genitalia. This species apparently occurs throughout most of South America, but it is not known from Central America and is perhaps replaced there by some other species of the anceta complex.

Specimens examined.--92 males and 27 females, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas. GUYANA. Potaro; Rio Demarara. BRAZIL. Rondonia: Calama, R. Madeira, below R. Machados; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Joinville; Neu Bremen, Blumenau; Rio Laeiss; Tayo; "St. Catherines"; São Paulo: Alto da Serra, Santos, 800 m.; Alto da Serra, Sao Paulo; Serra do Mar. BOLIVIA. Santa Cruz: Buenavista; Nuflo de Chavez, Esperanza; not located: R. Chimato, 1900 ft.; Salampioni, 800 m.; no specific locality: Bolivia. PERU. Junin: Chanchamayo, 2000 m.; Pasco: Huancabamba, 3000 ft.; Puno: Yahuarmayo, 1200 ft.; no specific locality: Peru. ECUADOR. Chimborazo: Dos Puentes, 1700 ft., kil. 99; Esmeraldas: Salidero, 350 ft.; Loja: Environs de Loja; Napo-Pastaza: Canelos, Rio Bobonaza, 2100 ft. COLOMBIA. Boyacá: Muzo; Valle del Cauca: R. Dagua.

Pero orosata Poole, NEW SPECIES

Male (fig. 45).--Superficially identical to chapela, but perhaps slightly darker.

Male genitalia (figs. 468, 468a).--Characterized by hollowed-out base of uncus.

Female.--Unknown.

Types.--Holotype: Male, Puerto Elegio, Municipio Comaltepec, Oaxaca, Mexico, 2296 feet, IX-25-1961, E.C. Welling, in American Museum of Natural History. Paratypes: 1 male from Vista Hermosa, Municipio Comaltepec, Oaxaca, Mexico, in American Museum of Natural History; 1 male from Middlesex, Stann Creek District, British Honduras, in American Museum of Natural History; 1 male from Tuis, [Cartago], Costa Rica, in U.S. National Museum.

Discussion.--Pero orosata is superficially identical with chapela, but possibly where the two species occur together they have different flight periods. All known specimens of orosata have been taken in August and September, but the Central American specimens of chapela are labeled May to July.

Specimens examined.--4 males, August and September.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft.; Vista Hermosa, Municipio Comaltepec, 4650 ft. BRITISH HONDURAS. Middlesex, Stann Creek District. COSTA RICA. Cartago: Tuis.

Pero nigra (Warren), NEW COMBINATION

Azelina nigra Warren, 1904a:132.

Male (figs. 46, 47).--Legs brown black, marked with varying amounts of cream-colored scales. Thorax brown black, often slightly spotted with cream color, but never significantly so. Forewing basal area blackish with very slight brown tint, lighter along top margin of antemedial line; often lower part of basal area toward antemedial line and inner margin light brown or yellowish, of same color as subterminal area; median area black to brown black, outer one-third usually darker except toward costa; discal dot white, small; subterminal area varying from brownish to yellowish; tip of wing black; subterminal area finely striate with dark lines; subterminal area often variously marked with obscure patches. Hindwing brown black to black; postmedial line vague and defined only in anal angle; anal angle with light brown to yellow patch; fringe light brown. Below black, sometimes with almost purplish tinge; amount of light scaling variable, but more prominent in anal angle of hindwing.

Male genitalia (figs. 469, 469a).--Ventral process of valve makes this species easily identifiable.

Female (fig. 48).--Forewing very variable, from brown to black; differs from male in being wider winged and with conspicuous (in most instances) dark line in median area running from R_4 to inner margin along postmedial line; markings in subterminal area variable.

Female genitalia (fig. 935).--The shape of the ostium of this species is so variable that I consider it almost worthless when trying to identify specimens. The females are usually easily separable from other species in the genus on superficial appearance.

Variation.--A discussion of variation in this species for both males and females would include all possible combinations of brown. Some specimens are black with a yellowish median area, others are black with a brown subterminal area, some are uniformly brown, others almost uniformly black. Geographically the populations from the Peruvian Andes are the largest, very dark, and with the subterminal area almost consistently brown. The Guatemalan specimens have the yellow subterminal area most commonly. In the females, the variation is mostly from uniformly dark to uniformly brown. Unfortunately the small size of the series of females from any one locality makes generalizations difficult about females of different populations. In the male genitalia, the ventral processes of the valves are slightly thicker and more strongly developed in the Andean populations than in other areas, although again this is variable within a population. The ostium of the female genitalia is particularly variable.

Type.--Warren named nigra from "3 males from Chimate, Bolivia." The male in the British Museum of Natural History with Warren's type label is designated as the lectotype.

Discussion.--Although this species is widespread, it is seldom common anywhere. This may be the result of poor collecting in the proper habitat. My own experiences at Rancho Grande, Venezuela, indicate that it is probably found mostly in lowland areas,

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but it is impossible to be more specific. Possibly more than one species are involved.

Specimens examined.—221 males and 27 females, all year.

MEXICO. Chiapas: La Granja; Veracruz: Misantla; Orizaba; Paso San Juan; Tuxpan; "Verz Cruz." GUATEMALA. Izabal: Cayuga; not located: San Geronimo. NICARAGUA. Jinotega, 3400 ft. COSTA RICA. Cartago: Juan Vinas; Limón: Guapiles, 984 ft.; Puntarenas: Puntarenas; Monteverde, 4600 ft.; not located: Cushi, 3300 ft.; Sixola River. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Bugaba; Chiriqui; V. de Chiriqui, 3-4000 ft.; V. de Chiriqui, 2-3000 ft. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolivar: La Union, Caura River; Carabobo: San Esteban Valley, Las Quigas; Valencia, 1500-3000 ft.; Valencia. TRINIDAD. "Trinidad." GUYANA. Paramaribo. FRENCH GUIANA. Cayenne; St. Jean, Maroni; St. Laurent, Maroni; "French Guiana." BRAZIL. Amazonas: Alliance below S. Antonio, R. Madeira; Fonte Boa; Sao Paulo de Olivenca; Espirito Santo: Espirito Santo; Matto Grosso: Burity, 30 mi. N.E. Cuyaba, 2250 ft.; Nivac; Tombador, 16 mi. S. Diamantino, 1500 ft.; Minas Gerais: Uberaba; Vicosa; Pará: Para; Paraná: Castro; Rio de Janeiro: Teresopolis, Rio de Janeiro; Rio Grande do Sul: Guarani; Pelotas; Puerto Alegre; Rondonia: Calama, R. Madeira, below R. Machados; Santa Catarina: Nuevo Teutonia; Neu Bremen, Rio Laeiss; Rio Laeiss, Blumenau; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Sao Paulo. PARAGUAY. Asuncion: Trinidad; Guairá: Independencia; Paraguarí: Sapucay; not located: Iguassu; no specific locality: Paraguay. BOLIVIA. La Paz: San Ernesto, Mapiri, 1000 m.; Santa Cruz: Nuflo de Chavez, Esperanza; not located: Chimate, 760 m.; Salampioni, 800 m. PERU. Amazonas: Huambo; Junin: La Merced, 3000-4500 ft.; La Merced, Chanchamayo; Satipo; Chanchamayo, 2000 m.; Loreto: Rio Curray to Rio Napo; Rio Ucayali; Pasco: Oxapampa, 2000 m.; Puno: La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft.; San Martin: Jepelacio; not located: Pumayaca; Rio Colorado, 2500 ft.; Rio Tabaconas; no specific locality: Peru. ECUADOR. Loja: Environs de Loja. COLOMBIA. Boyacá: Muzo, 400-800 m.; Cundinamarca: Bogota; Canache; Santa Fe de Bogota; Magdalena: Minca, 2000 ft.; Vaupés: Ob. Rio Negro.

Pero mathanaria (Oberthür), NEW COMBINATION

Azelina mathanaria Oberthür, 1883:25, pl. 1, fig. 4.

Male (fig. 49).—Palpi tipped with white. Legs with ends of tibiae white. Forewing basal area grayish magenta, not contrasting with median area; discal dot white, often double, but not conspicuous; costa of median area lighter brown than remainder of area, particularly between discal dot and antemedial line in discal cell; subterminal area light gray brown with dentate white shade paralleling postmedial line about one-third way to outer margin; two dark blotches between Cu_2 and A_2, between this shade and postmedial line; apex of wing slightly darker than remainder of subterminal area. Hindwing fuscous with orange-brown shade in anal angle following postmedial line. Below gray violet with orange-brown blotch in subterminal area of forewing, in anal angle of hindwing following postmedial line, and often one in discal cell of forewing; postmedial line of hindwing set off with white. Abdomen tipped with white.

Male genitalia (figs. 470, 470a).—Easily identified by various processes of valve. Aedeagus may or may not have one or two pointed humps.

Female (fig. 50).—Larger than male; forewing much lighter and more orange; maculation as in male.

Female genitalia (fig. 937).

Variation.—In males of mathanaria the amount of orange brown varies in the discal cell of the forewing and in the anal angle of the hindwing. Those without the orange are usually darker than those with it. This is geographically variable, but I haven't been able to find any clear-cut trend. The population from Rio Songo, Bolivia, is dark, but that from Corvico [Coroico?], Bolivia, is bright. Both localities are in the department of La Paz. Possibly the differences are phenotypic responses to the environment.

Type.—Oberthür described mathanaria from two males from "Tonantins" [Amazonas, Brazil]. The specimen bearing Oberthür's type label and figured in the original description is designated as the lectotype.

Discussion.—Pero mathanaria is widely distributed throughout South America, but it is not known from Central America. Superficially it resembles stuposaria, but the male genitalia are markedly different. Pero mathanaria is larger than stuposaria and the males are almost uniform purple brown. The females of mathanaria are much larger and brighter than any of the stuposaria complex populations. Pero mathanaria can usually be easily separated from leptoina by the lack of white striations in the subterminal area of the forewing, a characteristic of leptoina.

Specimens examined.—113 males and 3 females, all year.

GUYANA. Omai; Potaro; Tumatumari; Tumatumari, Rio Potaro. FRENCH GUIANA. St. Jean, Maroni. SURINAM. Aroewarwa Creek, Maroewyn Valley. BRAZIL. Amazonas: Fonte Boa; Sao Paulo de Olivenca; Tonantins; Pará: Para; Rondonia: Porto Velho; Santa Catarina: "St. Catherines." BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m.; Yunga del Espiritu Santo; La Paz: San Ernesto, 1000 m., 68° W, 15° S; San Ernesto, Mapiri, 1000 m.; 10 miles above Mapiri, 2000 ft.; Santa Cruz: Rio Suruta, 400 m.; Sara, S. Cruz de la Sierra; not located: Chimate, 760 m.; Corvico, 1800 m.; Rio Songo; Salampioni, 800 m.; no specific locality: Bolivia. PERU. Amazonas: Huambo, 3700 ft.; Cusco: Cajon; Cuzco; Huánuco: Pozozo; Junin: Chanchamayo; La Merced, 3000-4500 ft.; Satipo; Lima: Lima; Puno: La Union, R. Huacamayo, 2000 ft.; Rio Huacamayo; Yahuarmayo, 1200 ft.; not located: Chaquimayo, 2500-3000 ft.; Rio Colorado, 2500-3000 ft.; no specific locality: Peru. ECUADOR. Loja: Environs de Loja; El Monje pres Loja; Zamora: Zamora.

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Pero leptoina Prout

Azelina semibrunnea Dognin, 1911a:186. [Not Warren, 1906: Preoccupied.]
Pero leptoina Prout, 1928:61.

Male (fig. 51).--Forewing similar to that of mathanaria; median area brown without reddish appearance of mathanaria; yellow-brown shade in discal cell absent; markings in subterminal area lacking or obscure, but suffused with covering of fine white striations. Hindwing patch in anal angle light yellow without orange appearance of mathanaria. Below postmedial line of forewing and hindwing very conspicuous; blotch in anal angle of hindwing almost two-thirds cream white.

Male genitalia (figs. 471, 471a).--Differing from mathanaria in shapes of processes of valve.

Female.--Unknown.

Types.--Dognin described semibrunnea from a single male from St. Jean, Maroni, French Guiana, now in the U.S. National Museum. Prout based leptoina on several specimens, but he stated that the type was one of two males from "La Union, [Puno], Peru." The male bearing Prout's type label from this locality is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--Pero semibrunnea is a homonym of Pero semibrunnea (Warren), 1906. Prout recognized the homonymy, but not knowing if he had the same species as Dognin's semibrunnea, described it instead of proposing a replacement name. Pero leptoina is widely distributed, but never common. It seems to be most common in the Amazon Basin.

Specimens examined.--13 males, May and June, October-December.

VENEZUELA. Amazonas: Rio Casiquiarie. FRENCH GUIANA. St. Jean, Maroni; Noveau Chantier. BRAZIL. Amazonas: Allianca below S. Antonio, Rio Madeira; Codajas, Upper Amazon; Monte Cristo. PERU. Puno: La Union, R. Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Yahuarmayo, 1200 ft. ECUADOR. Napo-Pastaza: Sarayacu.

Pero disjuncta Warren

Pero disjuncta Warren, 1906:552.

Male (fig. 52).--Legs heavily marked with cream-colored scales. Forewing basal area light brown, heavily shaded with black; median area brown or various shades of yellow brown; discal dot small, double, white; subterminal area light brown, usually heavily shaded with black striations. Below brown to gray brown, flecked with black scales; hindwing dark brown with yellow-orange blotch in anal angle.

Male genitalia (figs. 472, 472a).--Pero disjuncta differs from mathanaria and leptoina in lacking the complex processes of the valves, but is otherwise similar. The aedeagus has no striate plate at the tip, and it has a dentate patch on the side near the apex.

Female (fig. 53).--Maculation as in male, but uniform brown and with dark brown shade paralleling postmedial line in subterminal area of forewing above.

Female genitalia (fig. 936).--Characterized by shape of ostium and large signum.

Variation.--Pero disjuncta varies chiefly in the color of the forewing. The Guyanese specimens are uniform brown and have the black striations of the subterminal area weak, but the specimens from Peru are darker and have the median area either dark brown or light brown.

Type.--Warren described this species from a male and a female. The male from Rockstone, Essequibo, British Guiana [Guyana], in the U.S. National Museum is designated as the lectotype.

Discussion.--This species appears to have the same distribution as leptoina and mathanaria, and probably these three species are principally distributed in the Amazon Basin. Superficially disjuncta is different from either leptoina or mathanaria, but the male genitalia indicate that it is closely related.

Specimens examined.--48 males and 4 females, all year.

TRINIDAD. Caparo. GUYANA. Potaro; Rockstone, Essequibo; Tumatumari, Potaro. FRENCH GUIANA. Nouveau Chantier; St. Jean, Maroni. BRAZIL. Amazonas: Monte Cristo; Munderapo, Orinoco. BOLIVIA. Santa Cruz: Sara, 450 m.; not located: Salampioni, 800 m. PERU. Cusco: Quincemil, 2400 ft.; Huánuco: Tingo María; Junin: Satipo; Madre de Dios: Ob. Madre de Dios, 500-1200 m.

stuposaria Species Complex

The situation in this species complex is complex indeed. I have divided it into only two species (stuposaria and immundaria) in this revision, but possibly one or two of the stuposaria populations might be valid species. A closer examination is needed of the situation beyond what is possible here.

Pero stuposaria occurs from southern Central America throughout most of South America, and immundaria is found in Brazil, Paraguay, and Argentina, where it is most common in the States of São Paulo, Rio de Janeiro, Santa Catarina, Pará, and Rio Grande do Sul.

In stuposaria, there is a gradient in the shape of the parts of the male genitalia. The costal fold and the process of the valve below it are examples, as well as the subscaphium and the uncus. In Central America, the costal fold appears as in figure 475. The specimen from Aroa, Venezuela, is also like this, but populations from the Andes and eastern Venezuela have a costal fold as in figure 476. In Guyana, the costal fold is similar to that of the Venezuelan specimens, but in French Guiana, the costal fold begins to change and develop a definite cap as in figures 478 and 479.

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In Brazil, the situation becomes unclear, but in Pará, all specimens are immundaria. In southern Brazil, there are two species flying together in some places. One species is stuposaria and the other immundaria. The costal fold of immundaria is shaped as in figure 484, and it can be easily derived from that of specimens of stuposaria from French Guiana. The costal fold of stuposaria found in southern Brazil is shaped as in figure 483 and strikingly resembles that of the Central American populations, although superficially the Brazilian population is larger and brighter. It is possible that immundaria is derived from a peripheral population of stuposaria and that after speciation had proceeded to some extent, stuposaria reinvaded, perhaps from the southern Andes across the Matto Grosso. The great variability of the French Guiana and Surinam specimens is possibly the result of introgression between the two species. One male from Minas Gerais is intermediate between stuposaria and immundaria (fig. 481). The Amazonian populations of stuposaria are divergent from those of typical stuposaria, and the costal fold is shaped as in figure 477. The costal fold of a very small male from Santa Cruz, Bolivia, is shown in figure 482.

Pero stuposaria (Guenée), NEW COMBINATION

Azelina stupozaria Guenée, 1857:160.
Azelina trailii Butler, 1881:30. NEW SYNONYMY.
Azelina marcaria Oberthür, 1883:25. NEW SYNONYMY.

Male (fig. 54).—Legs with varying amounts of cream-white scaling. Forewing light brown, brown, orange brown, or gray brown; basal area light brown, shaded with varying amounts of reddish-brown and black scales; median area reddish brown with white discal dot; yellow-brown shade in discal cell from discal dot to antemedial line; subterminal area varying from dark cream to light brown; dark brown blotches following postmedial line at Cu_2 and M_3; series of black dots along outer margin. Hindwing dull gray brown along inner margin; yellowish brown along anal margin, particularly anal angle following postmedial line; series of black dots along outer margin. Below grayish with yellow-brown patch flecked with black scales in discal cell of forewing; hindwing yellow brown except at outer margin; postmedial line dull gray brown; discal dot obscure, white. Abdomen tip white. The specimen described is from the type locality. All specimens faded to lighter colors.

Male genitalia (figs. 473, 473a, 475-483).—Distinguished from immundaria by shape of costal fold and subscaphium. Aedeagus differs in position of spiny patch.

Female (fig. 55).—Forewing with outer half of median area darker than inner half; definite median line; no patch in discal cell; subterminal area with light brown shade from inner margin almost to costa, another wider shaded area beyond this. Hindwing almost uniform yellow brown.

Female genitalia (fig. 938).

Variation.—The male genitalia of stuposaria vary from locality to locality. Populations from Central America are considerably darker than those from Venezuela, Brazil, and the Guianas, and they do not have contrasting shades in the subterminal area. The patch in the discal cell in these populations is poorly defined. Amazonian specimens are dark, uniform brown to uniform orange brown, and are not variegated as are Venezuelan or Brazilian specimens. They most resemble the Central American specimens. Size is variable also in specimens from the Amazon Basin. The populations in Bolivia are much like the Central American populations, but one specimen from Santa Cruz is very small.

The populations in eastern Venezuela through Brazil are more contrastingly marked, with distinct shades in the subterminal area, and the subterminal area generally is lighter. Specimens from the Guianas are grayer than those from either Venezuela or Brazil and are similar to immundaria. There are several gray specimens, one from Amazonas, Brazil, and several from French Guiana. As a whole, the French Guiana specimens are variable, much more so than any other population. Females from Central America are less contrasting and darker than those from eastern South America, and they have the subterminal areas of the forewing and hindwing below red brown, not yellow brown. Within any locality there is almost always variation in the degree of color darkness, but the amount of variation differs from place to place.

Types.—Guenée named stuposaria from two females from "Bresil." A single female now in the Muséum National d'Historie Naturelle, Paris, is designated as the lectotype. The type of trailii is from "Pariti, Rio Purus," which is in Amazonas, Brazil, and it is in the British Museum of Natural History. Azelina marcaria is based on a single male from "Tonantins" [Amazonas, Brazil] and is also in the British Museum of Natural History.

Discussion.—Pero stuposaria is common in places and is possibly one of the generally adapted species that occur here and there in the genus. It is also a nightmare of variation and indeterminate specific limits. The types of both trailii and marcaria are from Amazonas, Brazil, and possibly this race will eventually have to be treated as a valid species. The variability of the French Guiana specimens and the intermediate male genitalia suggest introgression with immundaria.

Specimens examined.—175 males and 33 females, all year.

GUATEMALA. Izabal: Cayuga. COSTA RICA. Limón: Sixola River; not located: Esperanza. PANAMA. Canal Zone: Barro Colorado Island; not located: Lino, 800 m.; Rio Trinidad. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: Ciudad Bolivar; Carabobo: San Esteban Valley; Valencia, 1500-3000 ft.; Yaracuy: Aroa; Palma Sola. TRINIDAD. Arima Valley, 800-1200 m.; Caparo. GUYANA. Bartica; Omai; Rio Demarara; "British Guiana." FRENCH GUIANA. Cayenne; St. Jean, Maroni; St. Laurent, Maroni; "French Guiana." SURINAM. Moengo, Boven, Cottica River; Paramaribo. BRAZIL. Amazonas: Ponte Boa; Rio Madeira; Pariti, Ric Purus;

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Sao Paulo de Olivenca; Tonantins; Uberaba, Minas Gerais; Rio de Janeiro: Rio de Janeiro; Rondonia: Calma, below R. Machados; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Joinville; Nova Bremen, 250 m.; Rio Laeisa, Blumenau; "St. Catherines." URUGUAY. "Uruguay." BOLIVIA. Chapare: R. Cristal Mayu; Santa Cruz: Nuflo de Chavez, Esperanza; Prov. del Sata, 450 m.; Rio Suruta, 400 m. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Muzo, 400-800 m.; Vaupés: Ob. Rio Negro, 800 m.

Pero immundaria (Walker), NEW COMBINATION

Azelina immundaria Walker, 1866:1549.
Azelina fuscularia Felder and Rogenhofer, 1873: pl. 123, fig. 11. NEW SYNONYMY.
Azelina brunnea Dognin, 1911b:26. NEW SYNONYMY.

Male (fig. 56).—Forewing grayish brown; smaller than in stuposaria and heavily marked with dull gray; shading in subterminal area obscure and only an indication of two light shades. Below gray brown with vague orange-red patches in discal cell; apex of subterminal area of forewing yellow orange; yellow patch in anal angle following postmedial line of hindwing.

Male genitalia (figs. 474, 474a, 484).—Shape of costal fold usually characteristic of this species. Subscaphium truncate at tip.

Female (fig. 57).—Usually brown to dark brown, more uniform than female of stuposaria.

Female genitalia (fig. 939).

Variation.—There are a few specimens of immundaria that resemble Central American and Amazonian specimens of stuposaria, but never stuposaria from southern Brazil. Specimens from Argentina are dark, dull brown.

Types.—Walker described immundaria from three males from "Brazil," which are in the Hope Museum, Oxford University, and the male with number 1005 is designated as the lectotype. The type of fuscularia is a single female from "Brasilia, Ypanema, Guyana." This type is in the British Museum of Natural History. Dognin described brunnea from a male from "San Ignacio, Misiones, Haut Parana, Republique Argentine," which is now in the U.S. National Museum.

Discussion.—Pero immundaria is distributed from Brazil to Argentina, and where it occurs with stuposaria it is softer, duller, and very rarely yellow or orange.

Specimens examined.—71 males and 16 females, all year.

BRAZIL. Espírito Santo: Espirito Santo; Pará: Para; Paraná: Castro, 950 m.; Rio de Janeiro: Campo Bello; Laguna de Cacuresma; Petropolis; Rio Janeiro; "Rio"; Rio Grande do Sul: Pelotas; Santa Catarina: Hansa Humboldt, 60 m.; Jaragua do Sul; Joinville, Blumenau; "St. Catherines"; São Paulo: Santos; Sao Paulo; not located: Preto; Santa Cruz. PARAGUAY. Paraguarí: Sapucay. ARGENTINA. Misiones: Haut Parana, San Ignacio; not located: Villa Ana.

Pero parva (Schaus), NEW COMBINATION

Eusenea parva Schaus, 1901:244.
Pero dichomensis derogata Prout, 1933:92. NEW SYNONYMY.
Pero arditaria Debauche, 1937:17. NEW SYNONYMY.

Male (fig. 58).—Palpi tipped with white. Legs with white-tipped tibiae. Forewing light brown to brown; basal area grayish brown, not contrasting with median area; median area brown to dark brown, little lighter in discal cell between discal dot and antemedial line; discal dot indistinct, but large and marked off with black circle; postmedial line straight and white; subterminal area almost uniform light brown, with series of black dots along outer margin. Hindwing brown with light brown blotch in anal angle following postmedial line. Below brownish with apex of forewing slightly orange tinted.

Male genitalia (figs. 485, 485a).—Characterized by shapes of subscaphium and juxta.

Female.—Unknown.

Variation.—This species varies from dark brown to light brown, but most specimens are brown. Pero parva also varies in size; the type of parva is the smallest specimen I have seen. The postmedial line of the forewing above is usually straight, but in a few specimens it has a slight crook. One specimen is a softer brown than any of the others.

Types.—Schaus described parva from a single male from "Sao Paulo," and it is now in the U.S. National Museum. Pero dichomensis derogata was described by Prout from two males, but the male from "Alto da Serra, Sao Paulo" was designated in the original description as type. I have not seen the type of arditaria from Serra do Mar, but the illustration of the male genitalia given by Debauche and the description agree with this species.

Discussion.—The straight postmedial line, the small size, and the contrast of the brown median area with the tan subterminal area in the forewing will identify this species. Pero parva does not appear to be common anywhere.

Specimens examined.—6 males, March.

BRAZIL. Rio de Janeiro: Teresopolis; Santa Catarina: Jaragua; Nova Teutonia, 27°18' by 52°23', 300-500 m.; São Paulo: Alto da Serra; Sao Paulo.

Pero protea Poole, NEW SPECIES

Male (fig. 59).—Forewing dark reddish brown with slight purple or tan tint; basal area slightly grayer than median area, but not contrasting with it; antemedial line often with small spots of white on veins; median area with yellowish spot between discal dot and top of antemedial line; discal dot a white linear spot; postmedial line followed by

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either spots of white or a much interrupted white band; subterminal area lighter than median area, sometimes with pearl-gray tint, sometimes flecked with darker scales. Hindwing with lower half of subterminal area usually lighter than basal area and upper half of subterminal area; postmedial line fine, brown, followed by vague white band. Below light brown or gray brown with postmedial line of forewing straight and cream white, marked with spot of white on costa; postmedial line of hindwing crenulate and followed by cream color, particularly in anal angle; discal dot of hindwing black with cream-colored center.

Male genitalia (figs. 486, 486a, 487, 487a, 488-491).--Easily separated from next species by shape of costal fold.

Female (fig. 60).--Similar to male, but usually lighter brown, although not always.

Female genitalia (fig. 940).

Variation.--Individual and geographical variation must be treated separately because the latter is complicated. Two basic forms exist, one brownish, speckled with darker scales, and another of uniform brown with a pearly, milky appearance. However, intergrades between the two forms exist. Most females tend to be light brown, speckled with dark brown, but the males are about "half and half."

This species has formed several distinct races, which based on available specimens have disjunct ranges. Rather than describe each race, the male genitalia have been illustrated for each, particularly the costal fold and ventral process (figs. 488-491), although there are also differences in the shape of the uncus and the subscaphium. Superficially all the races are similar, but in the male and female genitalia there are large differences between races. One race occurs in Mexico and Guatemala (based on three specimens), the second occurs from Panama down through the Andes to Ecuador. The third ranges from Venezuela to Surinam, and the fourth is found in southern Brazil. Whether the ranges are really disjunct or the product of poor collecting is not known.

Types.--Holotype: Male, Barro Colorado Island, Canal Zone, Panama, December 24, M. Bates, in Museum of Comparative Zoology, Harvard University. Allotype: Female from type locality, July 20, 1940, in Museum of Comparative Zoology. Paratypes: 21 males and 6 females from type locality in Museum of Comparative Zoology; 3 males and 2 females in U.S. National Museum. The type series is restricted to the type locality.

Discussion.--The races have not been regarded as species because of similar situations in Pero, where the intergrades are present (e.g., clana, coronata, stuposaria). Perhaps more collecting will clear up the situation. Most of the known localities for protea are lowland forest. The species is apparently common on Barro Colorado Island in the Canal Zone.

Specimens examined.--99 males and 24 females, all year.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft. GUATEMALA. Izabal: Cayuga. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Bugaba, 800-1000 ft.; Panama: La Chorrera; not located: Cabima. VENEZUELA. Bolívar: La Union, Caura River; Carabobo: San Esteban Valley; Yaracuy: Aroa. TRINIDAD. Caparo; "Trinidad." GUYANA. Kartabo, Bartica District; Potaro; Tumatumari. FRENCH GUIANA. Cayenne; St. Jean, Maroni; St. Laurent, Maroni. SURINAM. Aroewarwa Creek, Maroewyn Valley. BRAZIL. Minas Gerais: Uberaba; Rio de Janeiro: Rio Janeiro; Santa Catarina: Blumenau; Donna Emma, 600 m.; Hansa Humboldt, 60 m.; Jaragua do Sul; São Paulo: Alto da Serra; Alto de Serra; Sierra de Cubotas. ECUADOR. Imbabura: Lita, 3000 ft.; Paramba; Paramba, 1050 m.; Napo-Pastaza: Sarayacu. COLOMBIA. Boyacá: Muzo, 400-800 m.; Muzo, 400 m.; Muzo; Cauca: Yuntas, pres Cali; Choco: Juntas, Rio Tamaua, Rio San Juan, 400 ft.; Cundinamarca: Pizzaro; Valle del Cauca: Naranjito, Rio Dagua, 3900 ft.; Vaupés: Ob. Rio Negro, 800 m.; not located: Bogota to Buenaventura; Cauca Valley.

Pero incompta (Warren), NEW COMBINATION

Azelina incompta Warren, 1900:209.

Male (fig. 61).--Almost identical with protea, but perhaps slightly larger.

Male genitalia (figs. 492, 493, 493a).--Easily distinguished by shape of costal fold and ventral process.

Female.--Unknown.

Variation.--The individual variation in incompta is similar in character to that found in protea. The two specimens from São Paulo de Olivença, Amazonas, Brazil, are more strongly marked than those from Peru.

Type.--Warren described this species from a male from "10 miles above Mapiri, Bolivia, 2000 ft," and it is now in the British Museum of Natural History.

Discussion.--The range of incompta is distinct from that of protea, and the species is known to occur in Peru, Bolivia, and the Amazon Basin, at least that part of the Amazon Basin near the east slope of the Andes.

Specimens examined.--23 males.

BRAZIL. Amazonas: Codajas, Upper Amazonas; Fonte Boa; San Antonio do Javary, Upper Amazon; Sao Paulo de Olivenca; 17-46-35 S Lat., 63-5-34 Long. BOLIVIA. La Paz: 10 miles above Mapiri, 2000 ft.; Santa Cruz: Nuflo de Chavez, Esperanza. PERU. Junin: Chanchamayo, 1000 m.; Chanchamayo, La Merced; La Merced; Loreto: Rio Sanipiyacu, Putamayo; Rio Ucayali; Puno: Chaquimayo, 2500-3000 ft.; La Union, R. Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Yahuarmayo, 1200 ft.

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Pero foeda Warren

Pero foeda Warren, 1906:553.

Male (fig. 62).--Head and thorax brown. Legs brown with tips of tibiae white. Forewing brown with slight yellow tint; basal area brown, but heavily overlain with dull gray; median area brown, darker than subterminal area; cell lighter, almost yellow; discal dot circular and cream colored in center; postmedial line brown, fine; subterminal area light brown, slightly scaled and darker; apex with three small black dots. Hindwing brown; discal dot circular; postmedial line brown, followed by yellow brown, particularly in anal angle; remainder of wing brown.

Male genitalia (figs. 494, 494a).--Characterized by process of valve and shape of subscaphium.

Female (fig. 68).--Similar to male, but slightly larger and smoother appearing.

Female genitalia (fig. 942).

Type.--Described from a single male from St. Laurent, Maroni [River], French Guiana, now in the U.S. National Museum.

Discussion.--Pero foeda is known only from the Guianas. The female described here is only doubtfully associated with the males.

Specimens examined.--8 males and 1 female.

GUYANA. Potaro. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. SURINAM. Aroewarwa Creek, Maroewyn Valley.

Pero lactelineata Warren

Pero lactelineata Warren, 1907:319.

Male (fig. 63).--Forewing light tan and whitish; basal area light tan, suffused with white, with some very vague dark scaling; antemedial line brown; median area brown, contrasting with remainder of wing; discal dot circular, white; discal cell lighter than remainder of median area and often almost yellowish; subterminal area light tan with whitish suffusion; apex darker, marked with black; vague black blotch in angulation of postmedial line into median area. Hindwing brown, not whitish, flecked with dark scales; postmedial line vague, followed by thin white band; wing orange yellow in anal angle, shading into brown ground color of wing; series of black dots along outer margin; discal dot present, circular, but not conspicuous. Below all tan without any whitish suffusion; postmedial line and discal dot of forewing white, contrasting with remainder of wing; postmedial line of hindwing white, expanded in anal angle; anal angle slightly more orange than remainder of wing; discal dot of hindwing black, often with small white center dot.

Male genitalia (figs. 495, 495a).--Shapes of costal fold and ventral process of valve will separate this species from cristila.

Female.--Unknown.

Variation.--Specimens of lactelineata that have the whitish suffusion of the forewing poorly developed appear yellowish and seem to be slightly lighter than other specimens. There is also some difference in the degree of darkness of the brown from individual to individual. Possibly older specimens tend to lose the whitish suffusion and take on a yellowish appearance.

Type.--Described from a single male from "Pozuzo, Peru" in Huánuco. This specimen is in the British Museum of Natural History.

Discussion.--Pero lactelineata is a pretty little species from the Andes, the majority from the east slope. The whitish suffusion of the forewing above is characteristic of the species.

Specimens examined.--16 males, all year.

BRAZIL. Amazonas: Sao Paulo de Olivenca. BOLIVIA. Cochabamba: Region Chapare, 400 m. PERU. Huánuco: Pozuzo; Tingo Maria; Madre de Dios: Aviapas; Puno: Chaquimayo, 2500-3000 ft.; San Gabon, 2500 ft.; Yahuarmayo, 1200 ft.; not located: Pumayaca. ECUADOR. Napo-Pastaza: Sarayacu; Tungurahua: Banos, Rio Pastaza, 5-7000 ft. COLOMBIA. Vaupés: Ob. Rio Negro, 800 m.

Pero cristila Poole, NEW SPECIES

Male (fig. 64).--Forewing tan to light brown, almost unicolorous; basal area scaled with some black, at least more so than median and subterminal areas; discal dot large, white, and preceded by yellow-brown area in discal cell; postmedial line almost straight, not angulated inward as in lactelineata; subterminal area slightly lighter than median area; series of small black dots along outer margin. Hindwing tan, lighter than forewing; discal dot circular, but not conspicuous; postmedial line brown, fading out toward inner margin; postmedial line followed by light brown band; series of black dots along outer margin. Below light tan, with discal dot of forewing white; postmedial line of forewing white, but not contrasting except at costa where it forms a white blotch; postmedial line of hindwing brown, not contrasting; discal dot black with white center.

Male genitalia (figs. 496, 496a).--Can be identified by shapes of costal fold and ventral process of valve.

Female.--Unknown.

Types.--Holotype: Male, R. Cristal Mayu, Chapare, [Cochabamba], Bolivia, August 29, 1949, 1000-2000 m., L.E. Peña, in Cornell University collection. Paratype: 1 male, Quincemil, Cusco, Peru, 2400 ft., August 1962, in American Museum of Natural History.

Discussion.--Pero cristila is known from only two specimens. When fresh, this species is tan, but when faded it appears yellow brown. The Bolivian

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specimen is in considerably better condition than the Peruvian one.

Specimens examined.--2 males, August.

BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m. PERU. Cusco: Quincemil, 2400 ft.

Pero exquisita (Thierry-Mieg)

Azelina exquisita Thierry-Mieg, 1894a:57.
Pero exquisitata [sic] Kaye and Lamont, 1927:98. [Misspelling.]

Male (fig. 65).--Palpi dark brown. Legs dark brown, heavily spotted with cream-colored scales. Forewing basal area brown gray, but heavily scaled with blue gray; median area brown gray with dark brown line in center running from top of discal cell to inner margin; costal margin in median area lighter brown; discal dot white, small, varying in distinctness; postmedial line fine, tending to be double, and becoming dull white between double lines at costa; subterminal area grayer than remainder of wing, with two darker shades in it; apex slightly darker; series of black dots along outer margin. Hindwing postmedial line dark, black, preceded by dark, fine band; base of wing heavily dark scaled; subterminal area darker toward costal margin. Below subterminal area of forewing uniform dark brown, except toward inner margin; remainder of wing brown, lighter toward costa; discal dot vague; hindwing uniform brown with waved, cream-colored postmedial line; small white discal dot surrounded by black. Abdomen browner ventrally.

Male genitalia (figs. 497, 497a-d).

Female (fig. 66).--Maculation as in male, but entirely brown, without any gray tint of male; maculation in general more distinct, and coloration more uniform; usually larger than male.

Female genitalia (fig. 941).

Variation.--The distinctness of the maculation, particularly the antemedial line of the forewing, varies, and the discal dot tends to be obscure in some specimens. The Matto Grosso and Minas Gerais specimens are smaller than any other population of exquisita. In these two populations the males often take on the brown female coloration, although they do retain a slight grayish tint. See discussion for variation in the male genitalia.

Type.--Thierry-Mieg described exquisita from a male from "Perou," and it is now in the U.S. National Museum.

Discussion.--This species breaks down into two geographically separated "types," which are distinguished by a few constant differences in the male genitalia. One "type" occurs in Central America, ranging to Colombia, and the other occurs in Brazil, Guyana, Bolivia, Peru, and probably also the Amazon Basin. In the first "type" (fig. 497d), the vesica of the aedeagus contains a flat plate toward the base. This sclerite is spinelike and small in the other "type" (fig. 497a). There are some other small differences in the vesica. In the costal fold the valve of the first "type" tends to develop a constriction in the center (fig. 497c), but the second "type" does not (fig. 497b). I have not been able to distinguish between the two groups superficially, and for the present I have considered them as races of one species.

This is a widespread species and probably occurs commonly in lowland forest.

Specimens examined.--182 males and 36 females, all year.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; Veracruz: Misantla. BRITISH HONDURAS. Middlesex, Stann Creek District; Orange Walk; Punto Gorda; Rio Grande. GUATEMALA. Izabal: Cayuga. COSTA RICA. Cartago: Sixola River. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Bugaba; not located: Lino, 800 m. VENEZUELA. Bolívar: La Vuelta, Caura River; Carabobo: San Esteban Valley; Yaracuy: Palma Sola. TRINIDAD. Arima; Caparo; Port of Spain; "Trinidad." GUYANA. Atkinson Airfield, Georgetown; Omai; Potaro; Rio Demarara; Tumatumari, River Potaro. FRENCH GUIANA. Nouveau Chantier; St. Jean, Maroni; St. Laurent, Maroni; "French Guiana." BRAZIL. Amazonas: Allianca, below San Antonio, R. Madeira; Santo Antonio do Javary, Upper Amazon; Teffe a Tonantins; 17-46-55 S lat., 63-5-34 long.; Matto Grosso: Burity, 30 mi. N.E. Cuyaba, 2250 ft.; "Matto Grosso"; Minas Gerais: Uberaba; Pará: Para; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Rio Janeiro; Santa Catarina: Neu Bremen; "St. Catherines." PARAGUAY. Guiará: Itape; Paraguarí: Sapucay; not located: "Paraguay." BOLIVIA. Cochabamba: Chapare, 400 m.; Yunga del Espiritu; La Paz: Corvico [Coroico?], 1800 m.; Rio Songo, 750 m.; San Ernesto, 1000 m., 68° W, 15° S; Santa Cruz: Buenavista, 750 m.; Nuflo de Chavez, Esperanza; Ric Suruta; Santa Cruz. PERU. Huánuco: Pozuzo, 800-1000 m.; Junin: Chanchamayo; La Merced, 3000-4500 ft.; La Merced, Chanchamayo; Palcazu; Satipo; Puno: Chaquimayo, 2500-3000 ft.; La Oroya, R. Inambari, 3100 ft.; Tinguri, 3400 ft.; Yahuarmayo, 1200 ft.; San Gabon, 2500 ft.; no specific locality: Peru. ECUADOR. Esmeraldas: Bulim, 160 ft.; Pambilar; R. Cayapas; Imbabura: Lita, 3000 ft.; Pramba [Paramba], 3500 ft.; Napo-Pastaza: Sarayacu. COLOMBIA. Boyacá: Muzo, 400-800 m.; Muzo, R. Cantinero, 400 m.; Muzo; Cauca: Yuntas, pres Cali; Juntas, Rio Tamaua, Rio San Juan, 400 ft.; Cundinamarca: Canache; Vaupés: Ob. Rio Negro, 800 m.

coronata Species Complex

The following two species pose a real identification problem without genitalic dissections. Because of the extreme variability of the male genitalia of coronata, it is difficult to determine just what is a species. Pero coronata seems to be moderately widespread with an extreme amount of clinal variation in the male genitalia. Figures 499-504 show the changes that occur in the ventral process of the valve of species as one goes from Central America into South America. Pero mephistola, however, is less widely distributed; most specimens are from Santa Catarina, Brazil. The single

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specimen of mephistola from Bolivia is unique so far. The two species probably occur together because coronata has been taken at Joinville in Santa Catarina. I have not been able to find any character to separate the species superficially, but locality can probably be used to determine specimens if used with caution and if specific determination is not absolutely critical. If the specific determination is important, the male genitalia must be used. The apex of the subscaphium can often be seen by brushing the scales from the end of the abdomen. The apex is double in mephistola and single in coronata.

Pero coronata (Warren)

Azelina coronata Warren, 1904b:567.

Male (fig. 67).--Legs red brown, shading to cream color distally. Forewing red brown; basal area brown, with slight light gray tint, but not set off from median area; antemedial line vague; median area brown to slightly red brown; circular, gray discal dot preceded by orange-brown spot in cell; postmedial line straight, light brown; subterminal area light brown, striate with darker brown of same color as median area, particularly toward postmedial line; series of vague black dots along outer margin. Hindwing brown, becoming lighter and with slight orange tint in anal angle; postmedial line light, moderately wide; vague series of dots along outer margin. Below light tan with postmedial line of forewing and hindwing dark brown followed by whitish band; discal dot of forewing vague; discal dot of hindwing white, usually present; hindwing shaded with yellowish along inner margin and anal angle. Abdomen red brown, apex with darker scales.

Male genitalia (figs. 498, 498a, 499-504).--Tip of subscaphium single, not bilobed; uncus notched at apex; ventral process of valve usually biramous to some degree.

Female.--Unknown.

Variation.--Superficial variation in coronata is not great, but there is some in the degree of darkness of the browns. Some specimens from Satipo and other places in Peru are dark brown, and one specimen from Pará, Brazil, is light and smaller than the other species. The light color of this Pará specimen may be due to fading. In the male genitalia there is much variation, particularly in the shape of the ventral process of the valve. Figures 499-504 show the variation in several populations. The general trend is for the dorsal part to develop into a flat shelf as one goes from Central America into South America. This shelf is least developed in the population from British Honduras, slightly more so in Guatemala, and well developed in Guyanese specimens. The shape of the ventral process is consistent within a population. There is some variation in the shape of the subscaphium and the uncus from place to place.

Type.--Warren described coronata from two males, but the specimen from Chanchamayo, Peru, was indicated as type. This specimen is in the British Museum of Natural History.

Discussion.--Pero coronata is a widespread species, but it is apparently rare and local. It and the next species are superficially identical, but the tip of the subscaphium in this species is always single and that of mephistola bifurcate.

Specimens examined.--49 males, January-August.

BRITISH HONDURAS. Melinda, Stann Creek District; Middlesex, Stann Creek district; Columbia; Punta Gorda; "British Honduras." GUATEMALA. Baja Verapaz: Chejel; Izabal: Quirigua. GUYANA. Omai; Potaro; Rio Demarara. FRENCH GUIANA. St. Jean, Maroni. BRAZIL. Amazonas: Codajas, Upper Amazon; Fonte Boa, Upper Amazon; Madeira River; Pará: Para; Santa Catarina: Joinville. BOLIVIA. Cochabamba: Yunga del Espiritu Santo; Santa Cruz: Nuflo de Chavez, Esperanza. PERU. Junin: Chanchamayo; Satipo; Puno: R. Huacamayo, 3100 ft.; San Gabon, 2500 ft.

Pero mephistola Poole, NEW SPECIES

Male (fig. 69).--Identical with coronata.

Male genitalia (figs. 505, 505a).--Subscaphium bifid at apex; ventral process of valve consisting of single arm.

Female (fig. 70).--Forewing more orange than in male; antemedial line more distinct and discal dot larger; yellow patch between discal dot and antemedial line absent, or poorly defined; veins of forewing accented slightly and dots on outer margin more distinct. Below postmedial line of forewing and hindwing better defined than in male; postmedial line of hindwing rounded and not straight as in male.

Female genitalia (fig. 943).

Types.--Holotype: Male, "St. Catherines," Brazil, in U.S. National Museum. Allotype: Female, Sapucay, [Paraguarí], Paraguay, Foster, in British Museum of Natural History. Paratypes: 1 male in U.S. National Museum from type locality; 1 male, Neuvo Teutonia, St. Catarina, Brazil, in American Museum of Natural History; 1 male from Iguassu, Paraná, Santa Catarina, Brazil, in British Museum of Natural History.

Discussion.--Pero mephistola is superficially identical with the preceding species, but the apex of the subscaphium of the male genitalia is always bifurcate.

Specimens examined.--9 males and 5 females.

BRAZIL. Rio de Janeiro: Teresopolis; Rio; Santa Catarina: Iguassu, Parana; Nova Teutonia; "St. Catherines." PARAGUAY. Paraguarí: Sapucay; no specific locality: Paraguay. BOLIVIA. La Paz: Rio Songo, 750 m.

Pero duida Poole, NEW SPECIES

Male.--Legs and palpi brown, only slightly speckled with white. Forewing brown with slight violet tinge; all markings indistinct; antemedial line

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almost absent; basal area slightly lighter than median area, same color as subterminal area; discal dot vague, dull white, almost absent in some specimens; postmedial line double, straight; subterminal area lighter than median area, and with slight violet tint, slightly speckled with few dark scales. Hindwing concolorous with subterminal area of forewing; postmedial line obscure, double. Below brown with slight violet tint; all markings absent or obscure.

Male genitalia (figs. 506, 506a-b).--Extremely distinctive.

Male eighth sternite (fig. 507).

Female (fig. 71).--Identical to male.

Female genitalia (fig. 944).

Types.--Holotype: Female, Mt. Duida, Amazonas, Venezuela, 1-2-1929, Tate No. 516, in American Museum of Natural History. Allotype: Male from type locality in American Museum of Natural History. Paratypes: 4 females from type locality in American Museum of Natural History.

Discussion.--I have made a female the type of this species because the only male specimen is in poor condition. All specimens are from the type locality, one of the sandstone mountains in the Amazon Basin. This species is highly specialized and very robust looking.

Specimens examined.--1 male and 5 females, December-February.

VENEZUELA. Amazonas: Mt. Duida.

Pero semibrunnea (Warren)

Eusenea semibrunnea Warren, 1906:541.

Male (fig. 72).--Palpi tipped with light brown. Legs spotted with light brown. Forewing brown, red brown, or light brown; basal area brown, but heavily scaled with dark gray, particularly along lower half of antemedial line; basal area lighter toward costa; median area darker than remainder of wing, although not greatly so, light toward antemedial line; discal dot black; postmedial line light brown, straight; subterminal area brown, scaled with dark brown, slightly more so toward postmedial line; series of small black dots along outer margin; veins slightly accented with lighter brown. Hindwing brown with dark violet tint; postmedial line white, straight; subterminal area becoming brown toward anal angle darker toward costa. Below dark, dull gray, scaled with brown; top of subterminal area and discal cell of forewing brown; subterminal area of hindwing also brownish; postmedial line of hindwing and forewing vague, dull white; discal dots of both wings absent.

Male genitalia (figs. 508, 508a, 509).--Shape of uncus and long ventral process of left valve are characteristic of semibrunnea.

Female (fig. 73).--Similar to male, but usually lighter in color and larger.

Female genitalia (fig. 945).

Variation.--Variation is marked in this species. Peruvian specimens are largest, and anal angle of the hindwing above is a slight orange tint. The Minas Gerais specimen is a tawny brown, lighter than either the Pará or Colombian populations. Major differences are in the genitalia, particularly in the shape and length of the processes of the valve (figs. 508-509). The length of the ventral process of the left valve varies from long to short; it is longest in the Andean populations and shortest in the Pará specimen. The process of the apex of the aedeagus may or may not be spiny.

Types.--Warren described semibrunnea from 1 male and 1 female. The male is from "Bolivia." This specimen is in the U.S. National Museum and is designated as the lectotype.

Discussion.--It is unfortunate a species so variable is represented by so few specimens. It is difficult to tell whether each population is variable or not. Pero semibrunnea is apparently local and rare.

Specimens examined.--10 males and 2 females.

SURINAM. Geldersland, Surinam River. BRAZIL. Maranhão: Olha de Agnas; Minas Gerais: Agua Suja; Pará: Para. BOLIVIA. No specific locality: Bolivia. PERU. Puno: Quinton, 5000 ft. COLOMBIA. Vaupés: Ob. Rio Negro, 800 m.

Pero plenilunata (Warren)

Pergama plenilunata Warren, 1904a:165.

Male (fig. 74).--Palpi brown; outer fringe of first segment and tip of third white to cream colored. Legs brown, heavily speckled with white. Forewing basal area brown with slightly violet tint, scaled with light brown toward costa; antemedial line indistinct; median area brown, darker than either basal or subterminal areas; discal dot circular, dull white, preceded by yellow spot in cell between it and antemedial line; vague darker brown line preceding postmedial line; postmedial line light brown, straight to slightly angled between M_1 and M_2; subterminal area light brown, flecked with dark scales; series of white and black dots along outer margin. Hindwing brown; postmedial line cream colored, better defined toward anal angle; subterminal area in lower one-third with orange tint; series of black dots along outer margin. Below light brown, with postmedial line of forewing and hindwing cream colored and distinct; postmedial line of hindwing crenulate; hindwing with small white, circular discal dot; hindwing flecked with black.

Male genitalia (figs. 510, 510a, 511-513).--Shapes of ventral processes of valves will separate this species from either of next two.

Female (fig. 75).--Similar to male.

Female genitalia (fig. 946).

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Variation.--Superficial variation in this species is not great. The coloration of the wings varies some, but not greatly, and the angulation of the postmedial line of the forewing above also varies. The male genitalia have a strong clinal variation with a sharp break between the Bolivian-Peruvian populations and the specimens from Ecuador. In the Bolivian-Peruvian populations, the ventral processes of the valves are strongly developed, but in the specimens from Ecuador they are not as well developed, particularly on the left valve. The middle of the juxta is indented in the Bolivian-Peruvian specimens, but not or only slightly so in the Ecuadorean population. The two spines of the juxta are larger and closer together in the Bolivian specimens. The sclerotization of the tip of the vesica is short in specimens from Ecuador, but long in the Bolivian-Peruvian series.

Type.--Warren named plenilunata from a male from R. Inambari, [Puno], Peru, now in the British Museum of Natural History.

Discussion.--The clinal variation in the male genitalia of plenilunata from southern Peru and Bolivia to Ecuador is interrupted in northern Peru, where unfortunately material is lacking. Superficially I cannot distinguish between the two groups and consider them to be races of the same species.

Specimens examined.--133 males and 1 female, May-December.

COLOMBIA. Meta: Villavencencio; Vaupés: Ob. Rio Negro, 800 m. ECUADOR. Loja: Environs de Loja; Zamora: Zamora. PERU. Amazonas: El Porvenir, 900 m.; Huambo, 3700 ft.; Cusco: Caradoc, Marcapata, 4000 ft.; Pampaconas River; Huánuco: Pozuzo, 800-1000 m.; Junin: Chanchamayo; La Merced; Lima: Lima; Pasco: Huancabamba, Cerro de Pasco, 6000-10,000 ft.; Puno: Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; R. Inambari, 6000 ft.; R. Slucuri, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.; not located: Pumayaca; no specific locality: Peru. BOLIVIA. Cochabamba: Upper Rio Toro, La Merced, 3000 m.; Yunga del Espiritu Santo; La Paz: Corvico, 1800 m.; Rio Songo; Yungas de la Paz, 1000 m.; no specific locality: Bolivia.

Pero dichomensis Prout

Pero dichomensis Prout, 1933:92.

Male (fig. 76).--Forewing almost identical with that of plenilunata, but yellow brown, not brown; subterminal area yellow brown, heavily striate with black lines; postmedial line not strong. Hindwing with light patch in anal angle more heavily speckled with dark scales than in plenilunata. Below light yellow brown; yellow patch in upper half of subterminal area of forewing; neither wing uniform brown as in plenilunata.

Male genitalia (figs. 514, 514a).--Shapes of ventral processes of valves are characteristic of this species.

Female.--Unknown.

Variation.--Some specimens are slightly more striate in the subterminal area of the forewing above, but never greatly so.

Type.--Prout described this species from several specimens from Peru, but he stated that the type was one of five males from Santo Domingo. The male with Prout's type label from this locality is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--This species is similar to plenilunata, but is yellow brown not brown, and has a rough appearance in contrast to the smooth, brown look of plenilunata. It is almost identical to the next species, but the club-shaped ventral process of the valve of the next species can usually be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--14 males.

BOLIVIA. Cochabamba: Yunga del Espiritu Santo. PERU. Puno: La Oroya, R. Inambari, 3100 ft.; Oconeque, 7000 ft.; Santo Domingo, 6000 ft.

Pero cerra Poole, NEW SPECIES

Male (fig. 77).--Forewing almost identical with that of dichomensis, but slightly darker; subterminal area not as yellow nor as heavily striate with dark lines. Below more uniform tan than in dichomensis, but not as uniform as in plenilunata.

Male genitalia (figs. 515, 515a).--Club-shaped ventral process of right valve is characteristic of cerra.

Female.--Unknown.

Types.--Holotype: Male, Huancabamba, Cerro de Pasco, [Pasco], Peru, E. Boettger, in British Museum of Natural History. Paratypes: 2 males from type locality in British Museum of Natural History.

Discussion.--Pero cerra appears to be a cross between plenilunata and dichomensis, but the club-shaped process of the right valve is characteristic and can usually be seen by brushing away the scales from the tip of the abdomen. There is a possibility that cerra is only a race of dichomensis.

Specimens examined.--3 males.

PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.

lustraria Species Complex

The lustraria complex consists of three species, two from the Andes and a third from Brazil. The males are light brown to brown, but the females are dark gray to gray brown and more robust than the males.

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A key to males based on superficial appearance follows.

1. Antemedial line of forewing with 2 marked points projecting into median area 2

   Antemedial line of forewing above with just 1 point projecting into median area ..... pinsa

2. Postmedial line of forewing above markedly outcurved between veins; subterminal area of forewing above finely striate with white lines ..... boa

   Postmedial line of forewing above outcurved only between 2A and Cu_2, and M_1 and M_2; subterminal area of forewing above marked with white, but not with fine white lines ..... lustraria

Pero lustraria (Guenée)

Azelina lustraria Guenée, 1857:156.

Male (fig. 78).—Palpi and legs light brown. Forewing light brown; antemedial line jutting into discal cell, shaded with cream color on top of projecting part; antemedial line again projecting below Cu; median area with outer one-fifth slightly darker than inner four-fifths; postmedial line marked with cream color toward costa; subterminal area with cream-colored stripe from top of postmedial line to middle of outer margin, and another from about middle of postmedial line to bottom of outer margin. Hindwing postmedial line white with red-brown band following it in anal angle; outer margin at anal angle with two white stripes and two black dots. Below light brown; apical half of subterminal area of forewing rich, dark brown; hindwing with large, black discal dot and brown spot following postmedial line in anal angle.

Male genitalia (figs. 516, 516a, 519).—Characterized by shapes of uncus and ventral processes of valves. Vesica lacks sclerotized area.

Male eighth sternite and tergite (figs. 517, 518).

Female (fig. 79).—Forewing maculation as in male, but dark brown to dark gray brown; many specimens with fine white striations on both wings.

Female genitalia (fig. 947).—Signum present.

Variation.—There is some variation in the color of the wings, but nothing significant.

Type.—Guenée named lustraria from a single male from "Brésil." This specimen is in the British Museum of Natural History.

Specimens examined.—60 males and 15 females, all year.

BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Itatiaya; Petropolis; Rio Janeiro; Rio; Teresopolis; Santa Catarina: Blumenau, New Bremen; Blumenau; Hansa Humboldt, 60 m.; Hansa Humboldt; Jaragua do Sul; Rio Laeiss, Blumenau; Rio Vermelho; "St. Catherines"; São Paulo: Salto Grande, Paranapenema; Sao Paulo; not located: Canto Gallo; no specific locality: Bresil.

Pero pinsa Poole, NEW SPECIES

Male (fig. 80).—Similar to lustraria. Forewing antemedial line with lower of two projections found in lustraria poorly developed or absent; apex of wing not darker than in lustraria. Hindwing postmedial line not contrasting as in lustraria. Below as in lustraria.

Male genitalia (figs. 520, 521, 521a).—Characterized by shapes of ventral processes of right and left valves.

Male eighth sternite and tergite.—As in lustraria.

Female (fig. 81).—Similar to female of lustraria.

Female genitalia (fig. 948).

Variation.—Two specimens from Madre de Dios, Peru, are smaller than the other specimens. Otherwise, pinsa is not a variable species.

Types.—Holotype: Male, Rancho Grande [7 km. N. Maracay], Aragua, Venezuela, 1100 m., July 2, 1967, R.W. Poole, in U.S. National Museum. Allotype: Female from type locality, June 7, 1967, in U.S. National Museum. Paratypes: 1 male from type locality in each of following museums: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; 5 males in collection of Universidad Central de Venezuela; 22 males from type locality in U.S. National Museum.

Discussion.—This species is easily distinguished from the next by the shape of the antemedial line of the forewing and usually by the absence of white striations in the subterminal area of the forewing above.

Specimens examined.—85 males and 1 female, June-January.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. PERU. Huánuco: Tingo Maria; Junin: Perene River, 2000 ft.; Satipo; Madre de Dios: Avispas; Puno: Inambari River; La Oroya, 3100 ft.; La Union, Rio Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft. BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m.; Yunga del Espiritu Santo; Santa Cruz: Pto. Greether, Ichilo, 250 m.; no specific locality: Bolivia.

Pero boa Poole, NEW SPECIES

Male (fig. 82).—Forewing antemedial line with two distinct projections as in lustraria; postmedial line outcurved between veins; subterminal area with

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many fine white striations. Hindwing light brown band in anal angle following postmedial line not contrasting as in lustraria. Below hindwing not flecked with black as in lustraria; dark brown mark in anal angle about three times longer than wide.

Male genitalia (figs. 522, 522a).—Characterized by shapes of ventral processes of right and left valves.

Male eighth sternite and tergite.—As in lustraria.

Female (fig. 83).—Similar to female of lustraria.

Female genitalia (fig. 949).

Variation.—The specimens from Costa Rica have the postmedial line of the forewing above with the outcurvings between the veins less marked than in the populations from Bolivia and Peru. The white striations of the subterminal area of the forewing above are poorly developed in the Costa Rican specimens.

Types.—Holotype: Male, San Esteban Valley, Las Quigas, [Carabobo], Venezuela, Klages, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 9 males from type locality in British Museum of Natural History.

Discussion.—This is a widespread species, but it appears to be rare and sporadic, although a moderately large series has been collected at Fonte Boa, Amazonas, Brazil.

Specimens examined.—65 males and 4 females, March-September.

COSTA RICA. Cartago: Sixola River. PANAMA. Canal Zone: Barro Colorado Island. VENEZUELA. Carabobo: San Esteban Valley, Las Quigas; Lara: Sanare to Barquisimeto, 6000 ft.; Yaracuy: Palma Sola. BRAZIL. Amazonas: Fonte Boa; Teffe; Upper Amazon. BOLIVIA. Cochabamba: Charaplaya [Charapaya?], 1300 m.; R. Cristal Mayu, 1000-2000 m.; La Paz: Rio Songo, 750 m.; Pando: Humayta, Rio Madeiro; Santa Cruz: Buenavista; Pt. Greether, Ichilo, 250 m. PERU. Junin: Satipo; Loreto: Contamana, Rio Ucayali; Rio Pacaya, Lower Ucayali; Madre de Dios: Avispas; Ob. Madre de Dios, 500-1200 m.; Puno: La Union, Rio Huacamayo, 2000 ft.; not located: Pumayaca. ECUADOR. Napo-Pastaza: Alpayacu, Rio Pastaza, 3600 ft.; Archidona; R. Tiputini, Rio Napo; Sarayacu. COLOMBIA. Cauca: Juntas.

GROUP 2

The species in group 2 are probably remaining elements of a group from which group 3 has evolved. Superficially there are several divergent types in group 2, but the male genitalia are all similar.

Pero juna Poole, NEW SPECIES

Male (fig. 84).—Palpi with outer fringe light gray. Inner faces of tibiae light gray. Forewing dark brown; basal area gray brown, heavily scaled with dark brown; antemedial line brown; median area dark brown, darker than either basal or subterminal area; discal dot absent (in two specimens discal dot is present but obscure and areas between discal dot are light brown, contrasting with remainder of median area); postmedial line fine, light; subterminal area uniform, of same color as basal area. Hindwing dark brown; anal angle lighter brown; postmedial line vague, light gray. Below brown on gray base; gray strongest toward outer margins of both forewing and hindwing; cream-colored band along postmedial line of hindwing in anal angle, shaded with brown on its outer side; postmedial line of hindwing gray and vague.

Male genitalia (figs. 523, 523a).—Species lacks sclerotized bulb in vesica, although membranous area, possibly homologous, is present. Shape of subscaphium is characteristic.

Female (fig. 85).—Larger, lighter brown, with apices of forewings more falcate than in male.

Female genitalia (fig. 950).

Types.—Holotype: Male, Huacapistana, Junin, Peru, 1800 m., July 27-30, 1965, P. and B. Wygodzinsky, in American Museum of Natural History. Allotype: Female, Santo Domingo, Carabaya, [Puno], Peru, 6000 ft., in British Museum of Natural History. Paratypes: 2 males from Oconeque, Carabaya, Peru, in British Museum of Natural History; 1 female from Santo Domingo, Carabaya, Puno, in British Museum of Natural History; 1 male from Yungas de la Paz, 1000 m., in U.S. National Museum; 1 male from La Paz, 1000 m., in British Museum of Natural History.

Discussion.—This species is closely related to the next, although it differs in several characters in the male genitalia. The geographic ranges of juna and pulverosa are probably the best characters to use in separating the two species.

Specimens examined.—6 males, 2 females, February and July.

PERU. Junin: Huacapistana; Puno: Oconeque, Carabaya, 7000 ft.; Santo Domingo, 6000 ft. BOLIVIA. La Paz: La Paz, 1000 m.; Yungas de la Paz, 1000 m.; no specific locality: Bolivia.

Pero pulverosa (Warren), NEW COMBINATION

Eusenea pulverosa Warren, 1895:142.

Male (fig. 86).—Almost identical with preceding species. Forewing with contrasting brown spot between antemedial line and discal dot not as strong as in juna; duller with more gray and less brown. Hindwing with patch in anal angle of hindwing duller. Below duller, less brown than in juna.

Male genitalia (figs. 524, 524a).—Vesica in pulverosa containing bulbous, sclerotized structure not found in juna; shape of subscaphium different.

Female (fig. 87).—Forewing maculation as in male, but light brown, without gray of male. Below light brown; discal dot of hindwing distinct.

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Female genitalia (fig. 951).

Type.--Warren described pulverosa from a single male from Petropolis, Brazil, now in the British Museum of Natural History.

Discussion.--Pero pulverosa is probably geographically disjunct from juna. It is almost always more gray than juna.

Specimens examined.--25 males and 1 female, December.

BRAZIL. Rio de Janeiro: Petropolis; Rio Janeiro; Rio; São Paulo: Sao Paulo. PARAGUAY. Not located: Paso Yubay; no specific locality: Paraguay.

Pero rapinaria (Guenée)

Azelina rapinaria Guenée, 1857:157.

Male (fig. 88).--Antennae pectinate. Palpi brown, tip of third segment white. Legs brown, spotted with cream-colored patches. Forewing brown; basal area lighter than median area, but darker than subterminal area; median area gradually darker toward postmedial line; sharp white discal dot; subterminal area light, contrasting with median area, vaguely mottled with light and dark bands. Hindwing dull dark brown; anal angle with orange patch following postmedial line; postmedial line white in anal angle, but obscure for remainder of its length. Below brown; postmedial lines of both wings white; postmedial line of forewing slightly waved, spotted with white on veins; inner half of subterminal area of hindwing different shade of brown than outer half; postmedial line of hindwing dentate, black followed by white in anal angle; discal dot black, divided into four quarters.

Male genitalia (figs. 525, 525a).--Sclerotized bulb in vesica and shape of uncus will separate this species from rapta.

Female (fig. 89).--Antennae simple. Forewing light brown to orange brown, not brown as in male; subterminal area not contrasting with median area. Below orange brown; postmedial lines of both wings white only on veins.

Female genitalia (fig. 952).

Variation.--Some specimens are slightly darker than others.

Type.--Guenée described rapinaria from a single male from "Bresil." This specimen is in the British Museum of Natural History.

Discussion.--Pero rapinaria and rapta are superficially similar; however, the postmedial line of the forewing below is not as dark or as straight in rapinaria as in rapta, and the angulation of the postmedial line of the forewing above near M_1 is not as sharp in rapinaria as in rapta. The antennae in rapinaria are more strongly pectinate than in rapta. As far as is known the two species do not occur together.

Specimens examined.--22 males and 2 females, March.

BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Petropolis; Rio; Rio Janeiro; Teresopolis; Santa Catarina: "St. Catherines"; São Paulo: Salto Grande, Paranapanema; Sao Paulo.

Pero rapta Prout

Pero rapta Prout, 1928:62.

Male (fig. 90).--Antennae pectinate, but not as strongly as in rapinaria. Forewing richer brown than in rapinaria; angulation of postmedial line on M_1 stronger and sharper than in rapinaria. Below postmedial line of forewing dark, almost straight, not waved; postmedial line of hindwing not as well developed as in rapinaria; inner margin strongly flecked with cream-colored scales.

Male genitalia (figs. 526, 526a).--Absence of sclerotized bulb in vesica and shape of uncus will separate this species from rapinaria.

Female.--Unknown.

Variation.--Little if any.

Type.--Prout described rapta from several specimens, but stated that a male from Huancabamba, Cerro de Pasco, Peru, was the type. This specimen is in the British Museum of Natural History.

Discussion.--The characters given in the description will distinguish rapta from rapinaria, although the two species are superficially similar. Their ranges appear to be separate.

Specimens examined.--10 males, April and May, October and November.

PERU. Amazonas: El Porvenir, 900 m.; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo, 1000 m.; Chanchamayo; Pasco: Huancabamba, Cerro de Pasco; no specific locality: Peru. BOLIVIA. Cochabamba: Yunga del Espiritu Santo; La Paz: Corvico [Coroico?], 1800 m.; no specific locality: Bolivia.

Pero cetana (Jones), NEW COMBINATION

Azelina cetana Jones, 1921:336.

Male (fig. 91).--Antennae simple. Legs brown, but inner faces, tarsi, and apices of tibiae cream white. Thorax dark brown. Forewing brown; basal area yellow brown, heavily infuscated with black scales; antemedial line black, distinct; median area brown, often with slight orange tint; light patch between discal dot and antemedial line; discal dot a white spot; brown median line; postmedial line fine, black, dentate on veins; subterminal area dull yellow brown; apex darker than remainder of subterminal area; broken black terminal line. Hindwing dull brown; postmedial line present only in anal angle as yellow or cream-colored patch; black dots along outer margin. Below brown spotted with cream color; discal dot of forewing large, white; gray spot at apex of wing and another in outer half

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of lower part of subterminal area of forewing; postmedial line of hindwing shaded with cream color in anal angle and to lesser degree for remainder of its length; discal dot black.

Male genitalia (figs. 527, 527a).—Characterized by shape of costa of valve.

Female.—Unknown.

Variation.—The male from Rio de Janeiro is smaller and darker than the São Paulo specimens.

Type.—Jones described cetana from a single male from "Alto da Serra, Santos," now in the British Museum of Natural History.

Discussion.—This is a distinctive species, but it seems best placed here.

Specimens examined.—4 males, March and December.

BRAZIL. Rio de Janeiro: Teresopolis; São Paulo: Alto da Serra, Santos, 800 m.; Alto da Serra, Sao Paulo.

Pero hoffmanni Prout

Pero hoffmanni Prout, 1933:93.

Male (fig. 92).—Antennae simple. Legs light brown, spotted with dark brown scales. Forewing light brown; basal area slightly lighter than median area; antemedial line brown; outer one-third of median area darker than inner two-thirds; discal dot a white spot; subterminal area with dark shade following postmedial line near inner margin; apex darker than remainder of subterminal area. Hindwing dull brown; postmedial line a light band; orange-tinted patch in anal angle following postmedial line; inner margin lighter than remainder of wing, flecked with black scales. Below light brown; discal dot of forewing a white line; inner margin of forewing tending to dull white; base of hindwing, particularly inner margin, lighter than subterminal area; postmedial line a brown line, dentate, followed by cream-colored band; discal dot large, black.

Male genitalia (figs. 528, 528a).—Shape of subscaphium and costa will identify this species.

Female.—Similar to male, but darker.

Female genitalia (fig. 953).

Variation.—The females tend to vary in size, but otherwise hoffmanni is a nonvariable species.

Type.—Prout described hoffmanni from several specimens. The male bearing his type label in the British Museum of Natural History from Jaragua do Sul, Santa Catarina, Brazil, is designated the lectotype.

Discussion.—This is a distinctive species from southern Brazil.

Specimens examined.—13 males and 5 females, March, September, and October.

BRAZIL. Rio de Janeiro: Campo Bello; Laguna de Sacuarema; Petropolis; Teresopolis; Santa Catarina: Blumenau, Neu Bremen; Jaragua do Sul; Hansa Humboldt; Joinville; Rio Laeiss, Blumenau; "St. Catherines"; São Paulo: Sao Paulo.

Pero ligera (Schaus)

Azelina ligera Schaus, 1901:180.

Male (fig. 93).—Antennae simple. Legs with femora dark brown; tibiae and tarsi cream colored, spotted with dark brown scales. Forewing light brown; basal area light brown, slightly lighter on inner margin; antemedial line brown black, strong; median area darker than either basal or subterminal areas, but light toward costa; brown median line; discal dot usually double, although dots may be connected forming angulate line; inner half of subterminal area lighter than outer half; thin light band following dark brown postmedial line; two dark blotches following middle of postmedial line; series of black dots along outer margin. Hindwing dull white; postmedial line brown, waved; yellow patch in anal angle following postmedial line; inner margin scaled with dark brown. Below dull gray brown; inner half of upper third of subterminal area of forewing yellowish; inner margin cream colored, flecked with dark scales; discal dot large, black, divided into quarters; postmedial line dark brown, thick; inner half of subterminal area of hindwing yellowish, outer half gray.

Male genitalia (figs. 529, 529a).—Simplicity of genitalia is characteristic of this species.

Female (fig. 94).—Type female is orange brown flecked with dark both above and below. Most females are similar to males, but are perhaps slightly darker.

Female genitalia (fig. 954).

Variation.—The polymorphism in the females, with one form orange brown and the other light brown as in the males, is the only conspicuous variation in this species.

Type.—Described by Schaus from a single female from Castro, Parana, Brazil, now in U.S. National Museum.

Discussion.—The reason for the existence of two forms in the females of ligera, one orange brown and the other light brown as in the male, is confusing, particularly with so few specimens available. Pero ligera is otherwise a distinctive species that should not be confused with anything else in the genus.

Specimens examined.—4 males, 3 females.

BRAZIL. Paraná: Castro, 950 m.; São Paulo: Sao Paulo.

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castanea Species Complex

This complex of species is easily distinguished from all other groups of Pero by the rounded shape of the forewing. Based on the male and female genitalia, these species seem to be related to the following group. The species of the complex are distributed in the southern Andes and southern Brazil to northeast Argentina.

A key to males based on superficial appearance follows.

1. Antemedial line and postmedial line of forewing above followed by grayish patch on inner margin 2

   Antemedial line and postmedial line of forewing above not followed by grayish patch on inner margin 3

2. Larger (30-35 mm); forewing above orange brown; Andean ..... castanea

   Smaller (20-25 mm); usually light brown; southern Brazil to Argentina .... aeniasaria

3. Hindwing dark brown above; anal angle of hindwing above orange brown; discal dot of forewing small ..... lasiocampodes

   Hindwing above not dark brown; anal angle of hindwing above not orange brown; discal dot of forewing above larger 4

4. Postmedial line of forewing above double; Peru or Bolivia 5

   Postmedial line of forewing above single; southern Brazil to northeast Argentina ..... aeniasaria

5. Forewing above light brown suffused with white; median area not yellow brown or contrasting with either basal or subterminal area ..... albiorbis

   Forewing above darker brown, not light brown and not suffused with white; median area yellow brown, contrasting with basal and subterminal areas ..... lisima

Pero lasiocampodes (Dognin), NEW COMBINATION

Eusenea lasiocampodes Dognin, 1907:19.

Male (fig. 95).--Legs dark brown, spotted with cream-colored scales. Forewing rich orange brown; basal area orange brown, slightly duller than remainder of wing; antemedial line obscure; median area darker in outer half, but only slightly; discal dot white, small; postmedial line a light brown band preceded by darker brown; inner half of subterminal area more heavily speckled with gray black than outer half. Hindwing dark brown, but inner third of subterminal area concolorous with forewing; postmedial line marked with white at anal angle, but dark for remainder of its length. Below lighter brown; inner half of forewing dull, dark brown; hindwing lighter than forewing; discal dot of hindwing black and circular; inner margin and postmedial line in anal angle white.

Male genitalia (figs. 530, 530a).--Shape of subscaphium characteristic of lasiocampodes.

Female.--Unknown.

Type.--Described from a single male from "Huancabamba, Nord du Perou," in U.S. National Museum.

Discussion.--Pero lasiocampodes cannot be confused with anything else in Pero.

Specimens examined.--2 males.

PERU. Pasco: Huancabamba, Cerro de Pasco; Huancabamba.

Pero castanea (Warren)

Eusenea castanea Warren, 1904b:570.
Azelina miplesetharia Oberthür, 1912:297, fig. 1549.

Male (figs. 96, 97).--Antennae with white band between antennae, continuing up shafts. Legs dark brown spotted with cream-colored scales. Forewing basal area light brown, concolorous with remainder of wing except for light gray costal one-eighth; antemedial line black around gray part of basal area, but obscure for most of its length; median area with light gray patch next to antemedial line and along inner margin; discal dot large, circular, white; discal cell light between antemedial line and discal dot; postmedial line light brown, preceded by darker brown band; subterminal area with a light gray patch following postmedial line on inner margin; remainder of subterminal area light brown. Hindwing light brown (usually), very light toward costal margin, light brown in lower half of subterminal area, and marked with black along inner margin; postmedial line dark, followed by light band (note: in Bolivian specimens hindwing is dark brown). Below light brown, but with inner half of forewing white; hindwing similar to that of preceding species.

Male genitalia (figs. 531, 531a).--Shapes of costa of valve and juxta will separate this species from the next.

Female (fig. 98).--Larger than male, with slight violet tint. Below is more uniformly colored than in male.

Female genitalia (fig. 955).

Variation.--Specimens from Bolivia have the hindwing dark brown, not light brown; however, the forewing is typical for the species. The Bolivian specimens are also slightly darker below and smaller on the whole than the populations in northern and central Peru. Pero castanea is otherwise a nonvariable species within populations.

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Types.--Warren described castanea from two males from Huancabamba, Cerro de Pasco, Peru. The male with Warren's type label is designated as lectotype and is in the British Museum of Natural History. Oberthür described miplesetharia from an unstated number of specimens from Huambo, Amazonas, Peru, although he probably had only one at the time of the description. The male bearing his type label and figured in the original description is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--Pero castanea is superficially closest to albiorbis, but it is a uniform, rich, light brown with a gray patch on the inner margin at both the antemedial and postmedial lines of the forewing above. The Bolivian specimens are distinctly different from the Peruvian ones, but the male genitalia are similar in both populations.

Specimens examined.--49 males and 1 female.

PERU. Amazonas: Huambo; Junin: Chanchamayo; Pasco: Huancabamba, Cerro de Pasco; Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6400 ft.; Oxapampa; Oxapampa, 6400 ft.; San Martin: Huallaga. BOLIVIA. La Paz: Yungas de la Paz; no specific locality: Bolivia.

Pero albiorbis Prout

Pero albiorbis Prout, 1928:61.

Male (fig. 99).--Forewing light brown, heavily suffused with gray white; basal area light brown in center, light gray to white along antemedial line and toward base; median area light brown, slightly grayish in discal cell; discal dot circular, white, large; no gray patch following postmedial line on inner margin; subterminal area light brown with vague indication of white shade in center. Hindwing light brown with slight blackish suffusion; inner margin white heavily scaled with black; postmedial line black followed by white band. Below light brown; discal dot of forewing large, white; postmedial lines of forewing and hindwing followed by white band; discal dot of hindwing a small black spot in a white area; inner margin white flecked with black scales.

Male genitalia (figs. 532, 532a).

Female.--Unknown.

Type.--Described from three males from Huancabamba, Cerro de Pasco, Peru. The male with Prout's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--This species is superficially closest to castanea, but the white suffused forewing above and lack of a gray patch following the antemedial line on the inner margin of the forewing above will distinguish it from that species.

Specimens examined.--3 males.

PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.

Pero lisima Poole, NEW SPECIES

Male (fig. 100).--Similar to castanea. Forewing median area light yellow brown contrasting with basal and subterminal areas; gray patches following antemedial and postmedial lines on inner margin found in castanea lacking; light area between discal dot and antemedial line also lacking. Hindwing with costal half dark brown, inner half light orange brown; not marked with black as in castanea. Below light, uniform brown; postmedial line of hindwing a dull black band.

Male genitalia (figs. 533, 533a).--Characterized by shapes of costa of valve, juxta, and subscaphium.

Female.--Unknown.

Type.--Holotype: Male, "Bolivia," in U.S. National Museum.

Discussion.--The only species that lisima may be confused with is the female of aeniasaria.

Specimen examined.--1 male.

BOLIVIA. No specific locality: Bolivia.

Pero aeniasaria (Walker)

Eusenea aeniasaria Walker, 1860a:254.

Male (fig. 101).--Palpi light brown. Legs dull white, heavily flecked with dark brown. Forewing light brown usually; basal area light brown, but gray before antemedial line near costa; median area light brown; small gray patch following antemedial line on inner margin; discal dot white, circular; postmedial line a slightly darker band followed by light band; subterminal area light brown; series of black spots along outer margin. Hindwing light brown; heavily scaled with black on inner margin; discal dot a vague, black spot; series of strong black dots along outer margin. Below light brown; maculation obscure in most specimens; discal dot of forewing white, comma shaped; inner margin of hindwing cream white, scaled with black. Thorax with gray tuft of scales at base of abdomen above.

Male genitalia (figs. 534, 534a).--Shapes of subscaphium, juxta, and costa are characteristic for aeniasaria.

Female (fig. 102).--Forewing orange brown, darker than in male; median area often light yellow brown, contrasting with basal and subterminal areas. Hindwing usually light brown as in male.

Female genitalia (fig. 956).

Variation.--Pero aeniasaria is a variable species, but so few specimens are available that it is difficult to separate geographic and individual variation. Most males are as described, but one from Ponta Grossa, Paraná, Brazil, is brown with the median area of the forewing above light yellow brown, contrasting with the basal and subterminal areas. The only known male from Uruguay has the median area of the forewing above grayish, and the

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postmedial line of the hindwing above strong and black. A male from Punta Lara, Buenos Aires, Argentina, is heavily marked with dull brown scales. The size of the discal dot varies in all these specimens as well as the strength of the maculation of the underside of both wings. Two of the females have the median area of the forewing above light yellow brown, contrasting with the remainder of the wing, but the third female, from Castro, Paraná, does not. A female from "Espiritu Santo" has the hindwing above dark, dull brown, not light brown as in the other two females. The intensity of the two gray patches on the inner margin of the forewing above varies in both males and females.

Type.—Walker described this species from a single male from "Rio Janeiro," now in the Hope Museum, Oxford University.

Discussion.—This is a variable species known from only scattered specimens. Pero aeniasaria is possibly either rare, local, or both. It is the smallest species of this complex, and it is probably the only member of the complex in southern Brazil, Paraguay, Uruguay, or Argentina.

Specimens examined.—20 males and 3 females, all year.

BRAZIL. Espírito Santo: Espirito Santo; Paraná: Castro, 950 m.; Ponta Grossa; Rio de Janeiro: Rio Janeiro; Rio Grande do Sul: Guaraní; Santa Catarina: Nova Teutonia, 27°11 by 52°23; São Paulo: Salto Grande, Paranapanema; Sao Paulo. PARAGUAY. Paraguarí: Sapucay. URUGUAY. Picada de Rodriguez, Lavalleja. ARGENTINA. Buenos Aires: Punta Lara.

GROUP 3

Group 3 is a moderately large group of closely related species. The L-shaped discal dot of the forewing and the structure of the male genitalia are characteristic of the group. Most of the species are distributed primarily in lowland forest, and several, including externa, juruana, clysiaria, guruparia, and infantilis, are among the more common species in the Amazon Basin and the Guianas.

A key to males based on superficial characters follows.

1. Dark brown 2

   Light brown, golden brown, or gray 10

2. Central America 3

   South America 6

3. Distinct yellow patch on costa of forewing above between discal dot and postmedial line 4

   No distinct yellow patch on costa of forewing above between discal dot and postmedial line ..... clysiaria

4. Discal dot of hindwing above a small clear area; patch of yellow on costa of forewing above only moderately defined 5

   Discal dot of hindwing above a larger, clear area, not just a dot; patch of yellow on costa of forewing above very distinct ..... externa

5. Yellowish spot along inner side of postmedial line of hindwing above in area of median veins; dark brown .... circumflexata

   No yellowish spot along inner side of postmedial line of hindwing above in area of median veins; brown ..... simila

6. Postmedial line of hindwing above not distinctly dentate 7

   Postmedial line of hindwing above distinctly dentate, usually each tooth tipped by black spot 8

7. Yellowish spot along inner side of postmedial line of hindwing above in area of median veins ..... circumflexata

   No yellowish spot along inner side of postmedial line of hindwing above in area of median veins ..... loca

8. Distinct yellow patch on costa of forewing above between discal dot and postmedial line ..... externa

   No distinct yellow patch on costa of forewing above between discal dot and postmedial line 9

9. Bottom of discal dot of forewing above and below expanded, rounded; discal dot of hindwing not a small spot .. externa

   Bottom of discal dot of forewing above and below not expanded; discal dot of hindwing a small spot ..... clysiaria

10. Gray or dark gray brown 11

    Brown or yellow brown 16

11. Series of inward pointing triangles on postmedial line of forewing above near costa 12

    No series of inward pointing triangles on postmedial line of forewing above near costa 14

12. Forewing above light silver gray on yellow ..... infantilis

    Forewing above not light silver gray on yellow 13

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13. Upper projection of antemedial line of forewing above rounded, no longer or larger than lower 2; large brown blotch following discal dot of forewing below ..... incisa

Upper projection of antemedial line of forewing above not rounded, longer and larger than lower 2; no brown blotch following discal dot of forewing below ..... fragila

14. Postmedial line of hindwing above distinctly dentate, each tooth usually tipped by small black dot 15

Postmedial line of hindwing above not distinctly dentate ..... loca

15. Bottom of discal dot of forewing expanded, rounded; discal dot of hindwing not a small spot ..... externa

Bottom of discal dot of forewing not expanded; discal dot of hindwing not a small spot ..... clysiaria

16. Two white to silver-white streaks bounded by brown or dark brown above in subterminal area of forewing above 17

Streaks in subterminal area of forewing above, if present, not white 23

17. Larger (40-45 mm from wing tip to wing tip); forewing above light tan to tan, white maculations strong and costa almost entirely white ..... guruparia

Smaller (less than 40 mm from wing tip to wing tip); not light tan and white maculation usually not distinct 18

18. Smaller (25 mm from wing tip to wing tip); very polymorphic, usually not uniform tan ..... infantilis

Larger (30-40 mm from wing tip to wing tip); rarely polymorphic, often tan or yellow tan 19

19. Ecuador 20

Elsewhere 21

20. Larger (35-40 mm from wing tip to wing tip); maculation of forewing above usually clear ..... rumina

Smaller (30-35 mm from wing tip to wing tip); maculation of forewing above not clear ..... maca

21. Barro Colorado Island 22

Elsewhere ..... rumina

22. White markings of forewing above stronger; maculation stronger; wings not yellowish ..... registrada

White markings of forewing above not as strong; maculation not as sharp; wings often yellowish ..... rumina

23. Subterminal areas of forewing and hindwing above strongly flecked with brown and mottled; upper projection of antemedial line of forewing above not strongly accented with dark brown ..... juruana

Subterminal areas of forewing and hindwing not strongly flecked with brown above or mottled; upper projection of antemedial line of forewing above usually strongly accented with dark brown ..... dorsipunctata

Pero externa (Warren), NEW COMBINATION

Azelinopsis externa Warren, 1896:144.
Pero coracina Warren, 1907:318. NEW SYNONYMY.

Male (fig. 103).--Palpi brown. Legs brown, spotted with cream. Forewing dark brown; basal area dark brown, not distinct from median area, although somewhat lighter; antemedial line dark, but obscure, sometimes lightly marked with gray spots on veins; median area dark brown except for light brown triangular patch at costa stretching from top of antemedial line to about one-third length of postmedial line; discal dot a large white comma-shaped clear area, much like a musical eighth note; postmedial line dark brown followed by light gray band, both narrow; subterminal area dark brown with vague grayer shades. Hindwing dark brown with postmedial line light gray; discal dot a clear area (variable); small light brown spot between discal dot and postmedial line. Below light brown to brown, heavily flecked with black; postmedial lines of both wings dentate; large black patch in lower half of subterminal area of forewing.

Male genitalia (figs. 535, 535a-b).--Difficult to distinguish from next two species, but identifiable by comparison with figures 536b and 537b of the apices of the right valves.

Female (fig. 104).--Markings as in male, but uniformly light gray brown; discal dots of forewings and hindwings often larger, but variable; costa without light brown area of male. Below as in male.

Female genitalia (fig. 957).

Variation.--The males in the Guyanese and Amazonian populations often have the patch on the costa of the forewing weak or absent. There is a uniformly light brown form from the Amazon Basin, although one specimen from Guatemala is also uniformly dark brown. Males from the Guianas and the Amazon Basin are often gray blue suffused above as are specimens of the next species from the same area. The size of the discal dot varies and is largest in the Central American populations. In females the size of the

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discal dot varies tremendously, and although in Central America it can be used to separate externa from the next species, in South America this character often fails. This is true to a lesser extent of the males also.

Type(s).—Warren described externa from a single female labeled "MacKay, N. Queensland." The specimen is undoubtedly mislabeled. Pero coracina was described from a single male from Sapucay, Paraguay. Both types are in the British Museum of Natural History.

Discussion.—This species is closely related to the next, and although the males are usually easy to distinguish, the females are not. The distributions of these two species are rather unusual, extending from Central America through the Amazon Basin. Although the next species was collected at Rancho Grande, Venezuela, in cloud forest, externa was not. Why both externa and clysiaria should have blue-gray males in the Guianas and the Amazon Basin but not in Central America is not known.

Specimens examined.—142 males and 28 females, all year.

MEXICO. Chiapas: La Granja; Sinaloa: Venadio; Veracruz: Santa Rosa. BRITISH HONDURAS. Middlesex, Stann Creek District; Orange Walk. GUATEMALA. Izabal: Cayuga; Sololá: Olas de Moka, 3000 ft. PANAMA. Canal Zone: Barro Colorado Island. NICARAGUA. Eden. VENEZUELA. Bolívar: Caura Valley; La Union, Caura R.; La Vuelta, Caura R.; not located: Corocito. GUYANA. Rio Demarara; Rockstone, Essequibo. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. BRAZIL. Amazonas: Fonte Boa, Upper Amazon; Guajarutuba, Rio Purus; Manicore, Rio Madeira; Nauta, Upper Amazon; R. Jutahi; R. Madeira; below Rio Putamayo, Rio Solimoes; R. Solimoes; San Joas, Solimoes; Sao Paulo de Olivenca; Tabatinga to San Joas, Solimoes; Matto Grosso: Matto Grosso; Para: Para. PARAGUAY. Paraguarí: Sapucay. BOLIVIA. Cochabamba: Region Chapare; Santa Cruz: Nuflo de Chavez, Esperanza; Santa Cruz; not located: Rio Chimato, 1900 ft. PERU. Amazonas: Cavallo Cocho; Cusco: Quincemil, 2400 ft.; Junin: R. Perene; Satipo; Loreto: Contamana, R. Ucayali; Rio Curray, near Rio Napo; R. Pacaya, lower Pacayali; Rio Pacaya; Rio Sinpiuacu, Putamayo; near Taon, Rio Putamayo; Puno: La Union, R. Huacamayo, 2000 ft.; San Martin: Jelepacio [Jepelacio?]; not located: Rio Maranon.

Pero clysiaria (Felder)

Axelina clysiaria Felder and Rogenhofer, 1873: pl. 123, fig. 12.
Pero gammaria Möschler, 1881:400, pl. 17, fig. 8. NEW SYNONYMY.
Axelina micca Druce, 1892:64, pl. 47, fig. 15. NEW SYNONYMY.

Male (fig. 105).—Forewing maculation as in preceding species; basal area brown flecked with lighter brown; costa without light brown patch of externa, although hinted at in some specimens; discal dot smaller than in externa, particularly in Central American populations of two species. Hindwing discal dot smaller than in externa. Below browner than in externa, and with dark patch in subterminal area of hindwing not as distinct.

Male genitalia (figs. 536, 536a-b).

Female (fig. 106).—Similar to female of preceding species, but smaller and in Central American populations discal dots of forewing and hindwing smaller and not as angulate; postmedial line of forewing above tending to be more crenulate than in externa.

Female genitalia (fig. 958).

Variation.—The population from French Guiana has the wings heavily shaded with gray and is superficially different from the Central American and most of the Amazonian specimens. The males of other populations vary in the amount of light brown flecking in the forewing above. The Amazonian specimens are slightly more gray than the Central American ones.

Types.—Axelina clysiaria described from a single female from "Amazons" is in the British Museum of Natural History. Pero gammaria based on a female from Paramaribo, Surinam, is in the British Museum of Natural History. Axelina micca was described from several specimens from Central America, and the male bearing Druce's type label from "V. de Atitlan, 2500-3500 ft., Guatemala," is designated as the lectotype and is in the British Museum of Natural History.

Discussion.—The name "gammaria" is based on the population from the Guianas and that of micca on Central American populations. These two "types" could conceivably be different species, but the differences in the male genitalia are insignificant, and the Amazonian populations are intermediate between these two extremes. In the Amazon Basin and on the east side of the Andes the sharp superficial difference between clysiaria and externa from Central America is not present, and in some instances it is necessary to resort to the male genitalia for positive identification.

Specimens examined.—89 males and 42 females, all year.

MEXICO. Chiapas: Maravillas; La Granja; Colima: Manzanillo; Veracruz: Orizaba; Rinconada. BRITISH HONDURAS. Middlesex, Stann Creek District. GUATEMALA. Baja Verapaz: Chejel; Escuintla: Panteleon, 1700 ft.; Izabal: Cayuga; Sololá: V. de Atitlan, 25-3500 ft.; not located: Esperanza. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui; Panama: La Chorrera; not located: Lino, 800 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: Caicara, Orinoco; La Union, Caura River; Carabobo: San Esteban Valley, Las Quigas; Valencia; Federal District: Caracas; Yaracuy: Palma Sola. TRINIDAD. Port of Spain; Caparo; St. Augustine; "Trinidad." FRENCH GUIANA. St. Laurent, Maroni. BRAZIL. Amazonas: Sao Paulo de Olivenca; Maranhão: Maranhao; Pará: Para; Rio de Janeiro: Corcovado Forest, Rio de Janeiro. BOLIVIA. Santa Cruz: Nuflo de Chavez, Esperanza. PERU. Puno: Yahuarmayo, 1200 ft.

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ECUADOR. Bolivar; Balzapamba: La Chima, Los Rios; Napo-Pastaza: Sarayacu. COLOMBIA. Boyacá: Muzo, 400-800 m.; Vaupés: Ob. Rio Negro, 800 m.

Pero loca Poole, NEW SPECIES

Male (fig. 107).--Forewing brown to dark brown, darker when fresh, resembling that of clysiaria more than of externa, but uniform without dark scaling of that species; patch on costa of forewing lighter and more distinct than in clysiaria, but not nearly as distinct as in Central American populations of externa; discal dot as in clysiaria. Hindwing postmedial line almost even, without teeth present in clysiaria and externa.

Male genitalia (figs. 537, 537a-b).

Female (fig. 108).--Easily distinguished from preceding two species by contrasting, cream-outlined postmedial line of forewing; otherwise as in clysiaria.

Female genitalia (fig. 959).

Variation.--The shade of brown varies, possibly because of fading. Based on one or two specimens, this species may also have populations of blue-gray males.

Types.--Holotype: Male, Avispas, Madre de Dios, Peru, Sept. 20-30, L.E. Peña, in American Museum of Natural History. Allotype: Female, Cebas, Amazonas, Peru, in U.S. National Museum. Paratypes: Cavallo Cocho, Amazonas, Peru, V-VII, 5 males, in British Museum of Natural History; La Union, R. Huacamayo, Carabaya, 2000 ft., XI, Ockenden, Peru, 1 male in British Museum of Natural History.

Discussion.--Pero loca is closely related to the preceding two species. Initially it was considered to be a race of clysiaria, but the presence of specimens from the eastern part of South America refutes this hypothesis. It is easily confused with clysiaria, but it is consistently more uniform in appearance.

Specimens examined.--19 males and 2 females, all year.

GUYANA. Rockstone, Essequibo; Upper Kutari. FRENCH GUIANA. St. Jean, Maroni. BRAZIL. Amazonas: Fonte Boa. BOLIVIA. La Paz: Rio Songo, 750 m.; Santa Cruz: Nuflo de Chavez, Esperanza; no specific locality: Bolivia. PERU. Amazonas: Cavallo Cocho; Cebas; Loreto: Rio Maranon; Madre de Dios: Avispas; Puno: La Union, R. Huacamayo, 2000 ft. VENEZUELA. Bolívar: La Union, Caura River.

Pero circumflexata Prout

Pero circumflexata Prout, 1928:65.

Male (fig. 109).--Forewing with light patch on costa of median area not as contrasting or as strong as in externa. Hindwing with yellow blotch between discal dot and postmedial line; discal dot smaller than in externa. Below dark brown, not light gray brown as in externa.

Male genitalia (figs. 538, 538a). Easily distinguished from other species in group by shape of costal fold.

Female (fig. 110).--Forewing similar to that of externa female, but browner; costa scaled with light gray; colors fading from purple brown to brown.

Female genitalia (fig. 960).

Variation.--The specimens from Central America are smaller and more strongly marked than those from Peru.

Type.--Described from several specimens from Peru, but the type is stated to be a male from Huancabamba, [Junin], Peru, now in the British Museum of Natural History.

Discussion.--The distribution of this species is spotty; the species is perhaps just generally rare. The two females from Costa Rica are only doubtfully associated and may be females of the next species. The spot between the discal dot and the postmedial line of the forewing above will easily separate circumflexata from either externa or simila.

Specimens examined.--9 males and 7 females, June, September, and August.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Tuis, 2400 ft.; Puntarenas: Puntarenas, Monteverde; not located: Esperanza. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. PERU. Junin: Chanchamayo; Pasco: Huancabamba, 3000 ft.; Puno: Santo Domingo, Carabaya, 6000 ft.

Pero simila Poole, NEW SPECIES

Male (fig. 111).--Forewing brown, not dark brown, and more uniform than that of circumflexata; costal patch in median area not as clear cut as in circumflexata. Hindwing brown, not dark brown; patch between discal dot and postmedial line absent or indistinct, not yellow. Below brown, not dark brown.

Male genitalia (figs. 539, 539a).--Separable from circumflexata by shapes of costa of valve and uncus.

Female.--Unknown.

Type.--Holotype: Male, Puntarenas, Monteverde, Costa Rica, 4600 ft., 1960, in American Museum of Natural History.

Discussion.--Both this species and circumflexata have been taken at Puntarenas, Monteverde, Costa Rica. The two females listed under circumflexata from Costa Rica may be females of simila.

Specimen examined.--1 male, June-September.

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COSTA RICA. Puntarenas: Puntarenas, Monteverde, 4600 ft.

Pero juruana (Butler), NEW COMBINATION

Azelina juruana Butler, 1881:43.

Male (fig. 112).—Palpi and legs light clay colored. Forewing with basal area light brown, flecked with dark brown; antemedial line distinct only toward costa; median area darker than either basal or subterminal areas, but not conspicuously so; discal dot a white angulate line; median area often slightly lighter toward costa and with vague brown line paralleling postmedial line; postmedial line brown; subterminal area light brown, shaded with darker brown, particularly across apex; two darker shades in lower half of subterminal area. Hindwing clay brown with postmedial lines of hindwings followed by thin light shade; discal dot small, white; vague brown shade in anal angle. Below light clay brown with postmedial lines of forewing and hindwing dentate; dark patch in upper half of subterminal area of hindwing.

Male genitalia (figs. 540, 540a).—Shapes of juxta and uncus will separate juruana from any other species in genus.

Female.—Similar to male, but slightly more heavily flecked with dark scales.

Female genitalia (fig. 961).

Variation.—There is some variation in the amount of brown scaling on the forewing. The Amazonian specimens tend to be more uniformly colored than those from French Guiana and often have a set of dark brown triangles pointing into the median area on the upper one-fourth of the postmedial line of the forewing.

Type.—Described from a single male from "Rio Jurua, Amazonas, Brazil," in the British Museum of Natural History.

Discussion.—Pero juruana is distributed from the Guianas through the Amazon Basin to the east side of the Andes, paralleling the distribution of loca and the South American populations of externa and clysiaria.

Specimens examined.—64 males and 6 females, all year.

VENEZUELA. Bolívar: Cecilia Magdalena, Rio Caura; La Union, Caura River; La Vuelta, Caura River; Maripo, Caura River. GUYANA. Rio Demarara. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. SURINAM. Moengo, Boven, Cottica River; Aroewarwa Creek, Maroewyn Valley. BRAZIL. Amazonas: Fonte Boa; below Rio Putamayo, Rio Solimoens; R. Jurua; San Joas, Solimoes; Sao Paulo de Olivenca; Santo Antonio do Javary, Upper Amazon; Tabatinga to San Joas, Solimoens. PERU. Amazonas: Cavallo Choco; Loreto: Contamana, 1200 ft. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Muzo, 400-800 m.; Cauca: Cauca Valley; Gorgona Island: Gorgona Island, 200 ft.; not located: Bogota to Buenaventura.

Pero dorsipunctata (Warren), NEW COMBINATION

Azelina dorsipunctata Warren, 1900:209.

Male (fig. 113).—Legs speckled with brown. Forewing clay colored with brownish tint; basal area clay colored with few black speckles; antemedial line dark brown, but distinct only toward costa and in its lower indentations; median area concolorous with remainder of wing; discal dot white, linear, and with brown patch between it and postmedial line; postmedial line brown, more prominent toward costa, and marked with brown spots on veins toward inner margin; subterminal area with apex brown and with two vague darker bands in lower half. Hindwing with fine brown postmedial line followed by thin light band; rest of forewing concolorous with forewing. Postmedial line of forewing and hindwing below represented by series of black spots; ground color clay colored with black scales scattered over both wings; subterminal areas of both wings with obscure areas of brown scaling. Abdomen with second and third tergites with two black blotches.

Male genitalia (figs. 541, 541a).—V-shaped juxta will identify this species.

Female.—Similar to male, but somewhat more uniform appearing.

Female genitalia (fig. 962).

Variation.—This species is slightly variable in the amount of brown present. One specimen is heavily scaled with black and much darker than any other specimen I have seen.

Type.—Warren described dorsipunctata from a single male from "Palma Sola, Venezuela," now in the British Museum of Natural History.

Discussion.—Pero dorsipunctata is widely distributed, but it is primarily a lowland species. There are some specimens from the Andes, but this species was not taken at Rancho Grande, Venezuela.

Specimens examined.—34 males and 11 females, all year.

GUATEMALA. Izabal: Cayuga; Quirigua. BRITISH HONDURAS. Punta Gorda. PANAMA. Canal Zone: Barro Colorado Island; not located: Cabima. VENEZUELA. Bolivar: La Union, Caura River; La Vuelta, Caura River; Munderapo, Orinoco; Yaracuy: Palma Sola. TRINIDAD. Trinidad. BRAZIL. Amazonas: Curimata, R. Jurua; Fonte Boa; Madeira; Santo Antonio do Javary, Upper Amazon; Sao Paulo de Olivenca; Matto Grosso: Matto Grosso. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. SURINAM. Aroewarwa Creek, Maroewyn Valley. BOLIVIA. Cochabamba: Chapre; Santa Cruz: Nuflo de Chavez, Esperanza. PERU. Huánuco: Tingo Maria; Loreto: Rio Maranon; Puno: Chaquimayo, 2500-3000 ft.; La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft. COLOMBIA. Boyacá: Medina, 500 m.

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Pero fragila Poole, NEW SPECIES

Male (fig. 114).--Palpi gray. Legs gray, spotted with dark scales. Forewing gray to violet brown; basal area light gray or violet brown, concolorous with subterminal area, and slightly flecked with few black scales; antemedial line with upper projection pointed, not rounded, more strongly developed than lower two; median area darker than remainder of wing, darkest in cell; discal dot an angulate white line; series of black triangles on veins projecting into median area on upper one-fourth of postmedial line; subterminal area with two whitish bands, one running from costa in middle to below apex, and another from middle of postmedial line to outer angle; apex darker than remainder of subterminal area, but not greatly so. Hindwing discal dot a white spot, vaguely ringed with black postmedial line waved, dark, followed by light band; subterminal area orange tinted in anal angle (purple tinted in some populations); fringe white toward apex, dark toward anal angle. Outer half below of subterminal area of forewing very dark violet brown to black; wings light gray; discal dot of forewing large, angulate, and with small edging of black on top; hindwing with discal dot large and black, subterminal area in anal angle brownish; postmedial line of hindwing crenulate.

Male genitalia (figs. 542, 542a).--Species has ventral processes of valves sharp and not rounded as in next species. Cornutus in vesica is strong and two pronged.

Female (fig. 115).--Similar to male, but usually larger, browner, and maculation not as clear.

Female genitalia (fig. 963).--Shape of ostium will easily distinguish this species from the next.

Variation.--The Central American populations are dark, appearing violet brown, not gray; the intensity of the brown of the hindwing also varies considerably. In Venezuela, fragila is grayer than in Central America, and the dark cap of the discal dot of the forewing below is poorly developed. This dark cap is developed in the Central American populations. Bolivian specimens are light gray, but the Brazilian specimens are similar to those from Venezuela.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, August 11, 1976, R.W. Poole, in U.S. National Museum. Allotype: Female from type locality, August 17, 1967, also in U.S. National Museum. Paratypes: 1 male from type locality in each of following museums: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; male and female from type locality in Universidad Central de Venezuela; 3 males and 1 female from type locality in U.S. National Museum.

Discussion.--Pero fragila is a moderately common species, particularly in Central America. At Rancho Grande, Venezuela, it was rather rare, and I suspect its occurrence is patchy. It is absent in most areas where the next species occurs.

Specimens examined.--212 males and 20 females, all year.

MEXICO. Chiapas: La Granja; Veracruz: Misantla; Orizaba; Santa Rosa; "Vera Cruz." BRITISH HONDURAS. Melinda, Stann Creek District; Middlesex, Stann Creek District; Orange Walk; Rio Grande. GUATEMALA. Baja Verapaz: Chejel; Purulha; Izabal: Cayuga. NICARAGUA. Cape Gracias. COSTA RICA. Not located: Banana River; Esperanza. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui; V. de Chiriqui, 2-3000 ft.; not located: Cabima. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: La Union, Caura River; La Vuelta, Caura River; Corocito; Aspure [Suapure?], Caura River; Carabobo: San Esteban Valley, Las Quigas; Las Quigas; Las Quigas, near San Esteban; Trujillo: Valera; Yaracuy: Palma Pola; Zulia: Near la Rosa, east shore L. Maracaibo. TRINIDAD. Caparo. FRENCH GUIANA. St. Jean, Maroni. BRAZIL. Amazonas: Sao Paulo de Olivenca; Paraná: Castro, 950 m.; Rio de Janeiro: Petropolis; Rio Janeiro; Santa Catarina: Iguassu, Parana; Jaragua do Sul; Nuevo Teutonia; "St. Catherines"; São Paulo: Salto Grande, Paranapanema; Sao Paulo. PARAGUAY. Paraguarí: Sapucay. URUGUAY. "Uruguay." BOLIVIA. Cochabamba: Region Chapare, 400 m.; La Paz: Chimate, 760 m.; Salampioni, 800 m.; Santa Cruz: Buenavista; Nuflo de Chavez, Esperanza Pto. Greether, Ichilo, 250 m.; Rio Suruta, 400 m. PERU. Junin: Satipo; Loreto: Contamana, Rio Ucayali; Rio Ampiyacu, Putamayo; Punc: La Union, R. Huacamayo, 200 ft.; Yahuarmayo, 1200 ft. ECUADOR. Napo-Pastaza: Canelos, Rio Bobonaza, 2100 ft.; Sarayacu. COLOMBIA. Boyacá: Medina, 500 m.; Cundinamarca: Santa fe de Bogota; Vaupés: Ob. Rio Negro, 800 m.

Pero incisa (Dognin), NEW COMBINATION

Azelina incisa Dognin, 1889:67.

Male (fig. 116).--Forewing similar to that of preceding species; antemedial line with three projections even and rounded, top one not conical and not projecting farther into median area than other two; discal dot of forewing below with large dark brown cap; wing often with more brown scaling than in fragila.

Male genitalia (figs. 543, 543a).--Ventral process of valve strongly developed and rounded at tip; cornutus in vesica not two pronged at apex.

Female (fig. 117).--Similar to male, but perhaps slightly browner.

Female genitalia (fig. 964).--Easily identified by shape of ostium.

Variation.--There is not much variation, either geographic or individual in this species.

Type.--Dognin described this species from four males from Palanda, Ecuador. The male with USNM type number 32396 and with the male genitalia on slide R.W.P. 10567 is designated as the lectotype.

Discussion.--Pero incisa is usually larger than the preceding species, but not always so, particularly

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where the two occur together. The character of the antemedial line (three rounded, equal projections in incisa) will almost always separate these two species. Specimens of incisa are not numerous and occur as single specimens from many different localities.

Specimens examined.--50 males and 3 females, all year.

COSTA RICA. Cartago: Tuis, 2400 ft. PANAMA. Chiriqui: V. de Chiriqui, 2-3000 ft.; not located: Lino. COLOMBIA. Boyacá: Medina, 500 m.; Muzo, R. Cantinero, 400 m.; Muzo, 400-8000 m.; Magdalena: Magdalena Valley. ECUADOR. Bolívar: La China, Los Rios; Esmeraldas: R. Cayapas; S. Javier, R. Cachabi, 60 ft.; Imbabura: Lita, 3000 ft.; Paramba; Loja: Environs de Loja; Napo-Pastaza: Sarayacu; Zamora: 35 mi. S.E. Loja; Palanda. PERU. Huánuco: Pozuzo, 800-1000 m.; Tingo Maria; Junin: Chanchamayo; La Merced, Chanchamayo; Pasco: Oxapampa, 2000 m.; Puno: La Oroya, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; La Union, R. Huacamayo; Yahuarmayo, 1200 ft.; not located: Podega, 11,000 ft.; Pumayaca. BOLIVIA. Cochabamba: Incachaca; La Paz: Corvico [Coroico?], 1800 m.

Pero registrada Poole, NEW SPECIES

Male (fig. 118).--Palpi light brown. Legs brown to cream colored, but with apices of tibiae tipped with black. Forewing basal area whitish brown scaled with darker brown, particularly toward center; median area darker than basal area, lighter in center and darker toward postmedial and antemedial lines; costa of median area whitish, scaled with brown; discal dot an angulate white line; one or two dark brown triangles projecting into median area from postmedial line toward costa, and another from about middle to outer angle, followed distally by darker line; inner half of costal part of subterminal area whitish. Hindwing brown except black-gray top half of subterminal area; postmedial line a dark brown line followed by lighter band. Below as in fragila.

Male genitalia (figs. 544, 544a).--Species can be identified by shape of cornutus of vesica, tip of aedeagus, and division of spine patch toward tip of aedeagus into two patches, one of small spines and another of larger spines.

Female.--Unknown.

Types.--Holotype: Male, Barro Colorado Island, Panama, 3-VII-1941, J. Zetek, in U.S. National Museum. Paratype: Male from type locality, 20-III-1942, also in U.S. National Museum.

Discussion.--Superficially this species is almost inseparable from fresh specimens of rumina, although it is perhaps a somewhat brighter color.

Specimens examined.--2 males, March and July.

PANAMA. Canal Zone: Barro Colorado Island.

Pero guruparia (Felder and Rogenhofer), NEW COMBINATION

Azelina guruparia Felder and Rogenhofer, 1873: fig. 21, pl. 123.

Male (fig. 119).--Palpi very light tan. Legs light tan, with apices of tibiae black. Forewing basal area light tan, suffused with darker scales; median area light tan, darkest in middle and along postmedial line, whitish along costa, and slightly less so toward inner margin; discal dot an angulate white line, followed in cell by yellow patch not sharply differentiated from ground color; two brown triangles on postmedial line projecting into median area near costa; postmedial line brown, usually followed by two small brown dots on Cu_1 and Cu_2; two white lines in subterminal area, one running from white accented costa to about one-third, and other from just proximad of it to inner margin; series of black dots along outer margin. Hindwing light tan; subterminal area darker toward costa; postmedial line diffuse, dark gray, and followed by fine white line. Below cream colored to whitish, speckled with black scales; outer half of subterminal area from R_4 to Cu_2 dark brown; discal dot an angulate white line, accented with dark brown on top; subterminal area of hindwing darker than remainder of wing; discal dot of hindwing large and of four sections; postmedial line brown, crenulate, and with anal angle red brown.

Male genitalia (figs. 545, 545a).--Ventral process of valves, shape of cornutus of vesica, and tip of aedeagus are characteristic of this species.

Female.--Unknown.

Variation.--Little if any.

Type.--Felder and Rogenhofer described guruparia from a single specimen from "Amazonas." The abdomen is badly crushed and glued onto the specimen, and it is not possible to determine whether it is of a male or female, or if it even belongs to the specimen. This type is in the British Museum of Natural History.

Discussion.--This species is distinctive because of its whitish-tan coloration.

Specimens examined.--35 males, all year.

VENEZUELA. Amazonas: Mt. Duida; Bolívar: La Union, Caura River; La Vuelta, Caura River. BRAZIL. Amazonas: Manicore, Rio Madeira; Rondonia: Calama, R. Madeira below R. Machados. BOLIVIA. Cochabamba: Region Chapare. PERU. Loreto: Contamana, Rio Ucayali; Peruvian Amazonas, Chamicuros; Puno: Yahuarmayo, 1200 ft. ECUADOR. Napo-pastaza: Sarayacu.

Pero rumina (Druce), NEW COMBINATION

Azelina rumina Druce, 1892:64, pl. 47, figs. 17, 18.

Male (fig. 120).--Palpi light brown. Legs light brown flecked with dark brown scales. Forewing gray brown to orange depending on specimen and

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populations; basal and subterminal areas concolorous, median area darker and browner; antemedial line edged with white; median area with golden area between discal dot and postmedial line; discal dot a white angulate line; median area light on costa; postmedial line with dark brown inward pointing triangle on radial veins; subterminal area with two light bands, one from middle of costa to about one-third length of area, and another from middle of postmedial line to outer angle; between two lines is gold area; usually two blackish blotches following postmedial line at about middle. Hindwing slightly darker toward costa; postmedial line waved, dark brown, particularly toward inner margin. Below dull light brown; outer half of outer margin in forewing blackish, lighter than in fragila; postmedial line dark and heavy; discal dot black, large; postmedial line dark and crenulate; hindwing flecked with darker scales.

Male genitalia (figs. 546, 546a).—This species may be separated from the following by the rounded ventral process of the valve. The tip of the aedeagus is longer and straighter than in maca.

Female (fig. 121).—Similar to male, but usually much darker; gold shining through in only one or two places.

Female genitalia (fig. 965).

Variation.—The variation in this species is considerable and seems to follow the same trends as in fragila. The Central American populations are darker and smaller than those from the Andes. The Andean populations are large and yellow to gold. The population at Rancho Grande, Venezuela, is intermediate and is dark, probably because the specimens are fresh. The color becomes more yellow with age. In the female from Rancho Grande the amount of yellow scaling showing through is variable.

Type.—Druce described rumina from several specimens from Central America. The specimen from El Zumbador, Guatemala, bears Druce's type label and is designated as the lectotype. It is in the British Museum of Natural History.

Discussion.—This species is widely distributed and is probably common in many areas of montane forest. It was common at Rancho Grande, Venezuela, and has also been collected commonly in the lowland forest of Barro Colorado Island, Canal Zone.

Specimens examined.—109 males and 36 females, June-November.

MEXICO. Chiapas: La Granja; Santa Maria; Chiapas; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft. GUATEMALA. Izabal: Cayuga; not located: El Zumbador, 2500 ft. COSTA RICA. Cartago: Cashi [Cachi?], 3300 ft.; Juan Vinas; Orosi, 1200 m.; Sixola River; Tuis; no specific locality: Costa Rica. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui; V. de Chiriqui, 2-3000 ft.; not located: Lino, 800 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Yaracuy: Aroa. SURINAM. Geldersland, Surinam River. BRAZIL. São Paulo: Salto Grande, Paranapanema. BOLIVIA. Cochabamba: Incachaca; La Paz: Corvico [Coroico?], 1800 m.; San Ernesto, 1000 m., 68° W, 15° S. PERU. Junin: La Merced, R. Chanchamayo; Puno: Chaquimayo, 2500-2000 ft.; Santo Domingo, 6000 ft.; Yahuarmayo, 1200 ft.; not located: Pumayaca. ECUADOR. Zamora: Palanda; Zamora. COLOMBIA. Magdalena: Minca, 2000 ft.; Onca, St. Marta, 2200 ft.; Santander: Cucuta; Vaupés: Ob. Rio Negro, 800 m.

Pero maca Poole, NEW SPECIES

Male (fig. 122).—Forewing light brown to light yellow brown, similar to that of rumina, but appearing softer, and with maculation not as distinct; postmedial line of hindwing slightly less crenulate than that of rumina.

Male genitalia (figs. 547, 547a).—Easily distinguished from rumina by hooked, sharp shape of ventral process of valve.

Female (fig. 123).—Similar to male, but much darker.

Female genitalia (fig. 966).

Variation.—Most specimens are a soft brown, but a few are light yellow perhaps because they are rubbed or faded.

Types.—Holotype: Male, Macas, Santiago-Zamora, Ecuador, E.W. Rorer, in U.S. National Museum. Allotype: Female, Balzapamba, Bolívar, Ecuador, in British Museum of Natural History. Paratypes: 1 male in American Museum of Natural History from Naranjapata, Ecuador, 1850 ft.; 2 males from Chimbo, Chimborazo, Ecuador, in British Museum of Natural History; 1 male from Chimbo, 1000 ft., VII, in British Museum of Natural History; 1 male from Chimbo, Ecuador, in British Museum of Natural History.

Discussion.—The soft brown coloration of the males will usually distinguish this species from rumina.

Specimens examined.—10 males and 5 females, February, July, and November.

ECUADOR. Azuay: Sta. Isabel, 65 km. S.W. Cuenca, 600 m.; Bolívar: Balzapamba; La Chimra, Los Rios; Chimborazo: Chimbo; Chimbo, 1000 ft.; Naranjapata, 1850 ft.; Los Rios: Quevedo; Santiago-Zamora: Macas.

Pero infantilis (Warren), NEW COMBINATION

Azelina infantilis Warren, 1897:488.

Male (fig. 124).—Legs cream color to white brown; apices of tibiae black. Forewing basal area white brown, but heavily flecked with dark scales; median area gray brown, darkest in cell between top of antemedial line and discal dot; discal dot an angulate white line; cell slightly golden between bottom of discal dot and postmedial line; two dark brown triangles from postmedial line projecting into median area near costa; subterminal area gray brown with two vague light lines as in other species of group, but usually much more heavily shaded on their

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outer sides, often to exclusion of white lines. Hindwing postmedial line almost straight, not crenulate as in rumina; wing cream colored, heavily flecked with dark scales; dark margin of subterminal area of forewing poorly developed, often only a dark line; maculation much less marked than in other species of this group; discal dot of forewing poorly marked and not accented with dark scales; hindwing similar to that of rumina, but maculation much less developed.

Male genitalia (figs. 548, 548a).--Shapes of juxta and tip of aedeagus will identify this species.

Female (fig. 125).--Similar to male, but much browner and rougher appearing. Below heavily scaled with dark brown.

Female genitalia (fig. 967).

Variation.--The description was made from Venezuelan specimens. This is an extremely variable species and difficult to characterize. It is the smallest species of the group, but the average size of specimens varies from place to place. The specimens from French Guiana are the smallest and those from northern Venezuela and southern Brazil the largest. There is also much variation within a population. In specimens from St. Laurent, French Guiana, the ground color of the forewing is in some instances smooth appearing and in others rough. In some specimens the median area is dark brown, contrasting with the remainder of the wing, but in others the wing is almost concolorous. Some specimens are slightly suffused with white. The female may vary in the intensity of the markings. The Venezuelan and Brazilian specimens are much more like each other than either of them is to the French Guiana population. The few Central American specimens I have seen are weakly marked.

Type.--Described from a single male from "Onoribo." I do not know where this locality is, but it is possibly in French Guiana. This specimen is in the British Museum of Natural History.

Discussion.--In Venezuela this species was collected in secondary growth and shrub desert, and it is probably more characteristic of dry habitats than of forest. It is probably rare in Central America; in Venezuela where I collected it, it was not common. Pero infantilis is common in the Guianas judging from available specimens.

Specimens examined.--130 males and 35 females, all year.

MEXICO. Veracruz: Paso de San Juan. COSTA RICA. Not located: Avangarez. PANAMA. Canal Zone: Fort Kobbe. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: Ciudad Bolivar; Guyapa, Caura River; La Union, Caura River; La Vuelta, Caura River; Marip, Caura River; Suapure; Carabobo: San Esteban Valley; Cojedes: 4 km. S. El Pao; Lara: El Cuji, 7 km. N. Barquisimeto; Mérida: Merida; Monagas: Caripito; Yaracuy: Aroa. TRINIDAD. Arima Valley, 800-1200 ft.; Caparo; Trinidad. GUYANA. New River, 750 ft.; "Br. Guiana." FRENCH GUIANA. Cayenne; St. Jean, Maroni; St. Laurent, Maroni; French Guiana. SURINAM. Gelderaland, Surinam River. BRAZIL. Bahia: Cachimbo; S. Antonio da Barra; Matto Grosso: Urucum, nr. Corumba; "Matto Grosso"; Minas Gerais: Uberaba; Vicosa; Pará: Itaitubas to Obidos; Pernambuco: Serra de Bernada; "Pernambuco"; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Corcovado, 800 ft.; Rio Grande do Sul: Guarani; Santa Catarina: Iguassu, Parana; Jaragua do Sul; Neu Bremen, Rio Laeiss; Nuevo Teutonia; Santa Cruz: "St. Cruz"; São Paulo: Alto da Serra; Itapura; Sao Paulo. PARAGUAY. Paraguarí: Sapucay; not located: Mboreva; Palino Cue; no specific locality: Paraguay. URUGUAY. "Uruguay." BOLIVIA. Santa Cruz: Del Sara, 450 m.; Nuflo de Chavez, Esperanza; Mutum, 20 mi. W. Porto Suarez, 1500 ft. PERU. Loreto: Rio Ucayali, Contamino. ECUADOR. Napo-Pastaza: Sarayacu. COLOMBIA. Magdalena: Onca, St. Marta; not located: Don Amo, 2000 ft.; Sierra del Libane, 6000 ft.

GROUP 4

Group 4 is characterized by the structure of the valves (fig. 551), particularly the projections from their apices. The group is probably derived from a stock similar to the first species of group 1. There are several striking similarities between the anceta complex of group 1 and the stolidata complex of this group, including the vesica of the aedeagus and the outpocketings of the ductus bursae of the female genitalia.

The species of group 4, except the stolidata complex, seem to be mostly from peripheral parts of the distribution of the genus. One complex of species occurs in the West Indies and several other species are found in Argentina.

Pero steinbachi Prout

Pero steinbachi Prout, 1928:65.

Male (fig. 126).--Antennae pectinate. Palpi brown. Legs brown, speckled with cream-colored scales. Forewing brown or light brown; all maculation usually obscure and soft appearing; basal area brown, not contrasting with median area, lighter toward costa; antemedial line accented with dark scales toward costa, but indistinct for its lower two-thirds; median area brown, darker along postmedial line; discal dot small, black; postmedial line marked by change in color from median to subterminal areas; subterminal area lighter gray with two vague light shades; subterminal area lightly flecked with dark scales. Hindwing brown with vague, light postmedial line. Below forewing dull gray brown; postmedial line light and moderately clear; hindwing browner, lighter; postmedial line of hindwing dark brown, slightly waved; discal dot a brownish blotch.

Male genitalia (figs. 549, 549a).--Genitalia of species are characterized by tip of aedeagus.

Female (fig. 127).--Similar to male in Bolivian populations, but perhaps slightly brighter. In population from Pernambuco, Brazil, postmedial line of forewing is strongly dentate.

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Female genitalia (fig. 968).

Variation.—In the males are two color forms, one light brown and another dark brown. This is repeated in the females, but without the clear-cut distinction between the two forms found in the males. The females from Pernambuco, Brazil, have the postmedial line of the forewing above strongly dentate on the veins, much more so than in the Bolivian specimens; the females of the two populations are distinct. The single male from Matto Grosso is smaller and more clearly marked than males from either Bolivia or Pernambuco.

Type.—Prout described steinbachi from two males and three females from Buenavista, E. Bolivia. The male bearing Prout's type label and with the male genitalia on slide BM Geometridae 6722 is designated the lectotype and is in the British Museum of Natural History.

Discussion.—Pero steinbachi is possibly a species of grasslands. The females from Pernambuco are distinct from the Bolivian ones, and possibly there are two species rather than just one.

Specimens examined.—6 males and 5 females, all year.

BRAZIL. Matto Grosso: Corumba; Pernambuco: Sierra de Bernada; Tapera. BOLIVIA. Santa Cruz: Buenavista.

Pero bicurvata Warren

Pero bicurvata Warren, 1901:490.
Stenodonta incurvata Warren, 1905b:370. NEW SYNONYMY.

Male (fig. 128).—Antennae pectinate. Palpi and legs light brown to brown, almost uniformly colored. Forewing light brown to brown; basal area not contrasting with median area, but lighter toward costa, particularly along top of antemedial line; antemedial line distinct toward costa, accented with dark scaling, but becoming obscure in lower two-thirds of wing; outer one-fourth of median area darker than inner three-fourths; discal dot obscure and gray; postmedial line strongly incurved, dark, followed by thin light band; subterminal area light brown with one to three dark brown blotches from center toward inner margin. Hindwing brown to light brown; postmedial line even, rounded, varying from dark line with obscure light band following it to complete absence of dark line and strong development of light band; anal angle slightly browner than remainder of wing. Below almost uniform brown; postmedial lines of forewing and hindwing dark; discal dot of hindwing dark brown.

Male genitalia (figs. 550, 550a).—Shapes of costal fold, aedeagus, and uncus will separate this species from others in group.

Female.—Similar to male.

Female genitalia (fig. 969).

Variation.—The wings vary from light to dark brown, partly because older specimens have faded. The contrast between the median and subterminal areas of the forewing above is also variable as is the size of the discal dot. The single male from Santiago de Estero is smaller than the Tucumán specimens.

Types.—Pero bicurvata was based on a single male from Tucumán, Argentina. The type of Stenodonta incurvata is a female from Santiago de Estero. Both types are in the British Museum of Natural History.

Specimens examined.—6 males and 7 females, January.

ARGENTINA. Jujuy: Jujuy; Santiago de Estero: Suncha Corral; Tucumán: Ciudad de Tucuman; Tucuman.

Pero palmirensis Prout

Pero palmirensis Prout, 1910b:314.

Male (fig. 129).—Antennae pectinate. Forewing light brown to brown; basal area light brown; antemedial line brown, weak; outer half of median area darker than inner half; discal dot absent, or at most a small brown spot; postmedial line followed by slightly lighter thin band; subterminal area almost uniformly light brown. Hindwing lighter than forewing, almost dull white; inner margins slightly browner than remainder of wing; postmedial line brown, strongest in anal angle, obsolescent on costa.

Male genitalia (figs. 551, 551a).—Shapes of uncus and juxta will distinguish palmirensis from bicurvata.

Female.—Unknown.

Type.—Prout described palmirensis from a single male from Palmira, Mendoza, Argentina. This specimen is now in the British Museum of Natural History.

Discussion.—The type is slightly rubbed but distinctive.

Specimen examined.—1 male, September.

ARGENTINA. Mendoza: Palmira.

Pero binasta Warren

Pero binasta Warren, 1906:552.

Male (fig. 130).—Palpi brown. Legs light brown speckled with dark brown scales. Forewing tan; basal area light brown scaled with black, particularly toward costa; basal area lighter along antemedial line, markedly so toward costa; median area darker than either basal or subterminal areas and with dark median line running from inner margin to costa; median area lighter brown along costa; discal dot a vague light line; subterminal area brown with two conspicuous light bands, one running from top of postmedial line to middle of outer margin, and another from middle of postmedial line to outer angle; series of black spots along outer margin. Hindwing gray black except tan to orange brown in lower one-third of subterminal area; postmedial line a light band; discal dot a white

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spot; two black dots along outer margin in anal angle. Below tan with top half of subterminal area of forewing orange; subterminal area of hindwing orange brown except along middle of outer margin; discal dots of both wings large, black, with white centers; postmedial lines of forewing and hindwing cream colored; postmedial line of hindwing preceded by black in lower one-third. Abdomen light brown with apex dark brown.

Male genitalia (figs. 552, 552a).

Female.--Similar to male, but slightly larger.

Female genitalia (fig. 970).

Variation.--Specimens from the Guianas are usually lighter and smaller than those from Peru. The Peruvian specimens are slightly more orange below than other specimens.

Type.--Described from a single male from "Rockstone, Essequibo, British Guiana." This specimen is in the U.S. National Museum and lacks its abdomen.

Discussion.--Pero binasta is a distinctive species and perhaps not correctly placed here. It is probably most common in parts of the Amazon Basin, although most specimens are from southern Peru.

Specimens examined.--54 males and 1 female, all year.

GUYANA. Rockstone, Essequibo; Tumatumari, Rio Potaro. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. SURINAM. Kwakoegron, Saramaca River. BRAZIL. Amazonas: Sao Paulo de Olivenca; Rondonia: Calama, Rio Madeira below Rio Machados. PERU. Loreto: Rio Maranon; Rio Putamayo, Vic. Yahuas; Pasco: Huancabamba, 3000 ft.; Puno: Chaquimayo, 2500-3000 ft.; Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; Oconeque, 7000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.; Tinguri; Yahuarmayo, 1200 ft.

rectisectaria Species Complex

The following complex of species is Antillean, except one species from the Florida Keys. It is also the focus of a nomenclatorial tangle involving nerisaria and rectisectaria due largely to the extreme variability of these species, both sexual dimorphism and individual variation. This has led to many misidentifications. Most of the types of Herrich-Schaeffer and Walker are either mislabeled or ambiguously labeled. I have not been able to construct a workable key based on superficial appearance, but with the possible exception of the Bahamas each species appears to be geographically isolated from all others. Each is distinctive, and a comparison of the photographs and the use of geographic location should make identification easy. With the exception of nerisaria, this complex is poorly represented in collections, and more collecting is needed to establish the geographic limits of each species; possibly new species will also be found. I suspect that most of them are in lowland forest, although the series of sella came from elevations of 5,000 to 7,000 feet.

This rectisectaria species complex includes nerisaria through lastima.

Pero nerisaria (Walker)

Azelina nerisaria Walker, 1860a:188.
Azelina vetustaria Walker, 1866:1550. NEW SYNONYMY.
Pero curvistrigaria Herrich-Schaeffer, 1870:184. NEW SYNONYMY.
Azelina hubnerata var. atrocolorata Hulst, 1886:205. NEW SYNONYMY.

Male (figs. 131, 132).--Antennae pectinate. Forewing some shade of gray; basal area concolorous with subterminal area; antemedial line usually vaguely accented with white, uppermost angulation usually pointed, more so than in any other species of complex; median area may or may not contrast with remainder of wing; postmedial line often followed by heavy white shade, either straight or angulate at M_1 and Cu_2; subterminal area often with dark blotches toward apex, but not always. Hindwing brown gray; postmedial line light; two black dots in anal angle. Below brown to dull gray; postmedial line of forewing always straight, light gray to brown; discal dot of forewing a grayish blotch; discal dot of hindwing large, black, circular; postmedial line of hindwing light, slightly waved; subterminal area of hindwing darker than base, entire wing flecked with dark scales.

Male genitalia (figs. 553, 553a).--Shapes of valve and juxta are characteristics of this species.

Male eighth sternite (fig. 575).

Female (figs. 133, 134).--Forewing larger than that of male, usually some shade of brown, not gray; may have contrasting gray blotches in basal and subterminal areas; maculation as in male.

Female genitalia (fig. 971).

Variation.--This is easily the most variable species of Pero. Pero nerisaria has usually been divided into two species in collections depending on whether or not the postmedial line of the forewing is straight or angulate. There is probably linkage between pattern characters in the forewing, because the male specimens with an angulate postmedial line are also the grayest, have the most uniform subterminal and basal areas, and have the greatest tendency for the median area to be brown and contrasting. The range of color in the males is great, but the overall tendency is toward gray brown. In the females there is also some linkage between the jagged postmedial line and the development of gray patches along the postmedial and antemedial lines of the forewing. Again the range of browns is great. Size is also variable, and the discal dot of the forewing above in one specimen is white, not black.

Types.--The type of nerisaria is a female from "Santo Domingo," and it is the straight postmedial line, brown form. The type of vetustaria is also a female, again from "Santo Domingo," and it is the jagged postmedial line, gray blotch form. Both types are in the British Museum of Natural History.

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I have not seen the type of curvistrigaria, but the description fits the gray blotch form well and is probably also a female. Hulst described his variety atrocolorata from seven specimens. Grossbeck designated a female from "Florida" as lectotype and stated that the three males still in existence were honestaria. This female is in the American Museum of Natural History and is this species, not the one that occurs commonly in southern Florida. It is probably mislabeled.

Discussion.--The great variability of this species and its being confused with the next species have led to considerable confusion in the literature. Both of Walker's types were from "Santo Domingo," and I suspect that they are mislabeled because all other known specimens of this species are from Cuba. Pero nerisaria is one of only two species of Pero in Cuba and that should be enough to identify it.

Specimens examined.--77 males and 29 females.

CUBA. Hologuin; Limones; San Jose, Santa Clara; Santiago; Soledad. DOMINICAN REPUBLIC. "Santo Domingo."

Pero rectisectaria (Herrich-Schaeffer)

Gonodontis rectisectaria Herrich-Schaeffer, 1855b: fig. 325.
Gonodontis campinaria Herrich-Schaeffer, 1855b: fig. 458. NEW SYNONYMY.

Male (fig. 135).--Antennae pectinate, shaft white dorsally. Legs brown, spotted with few cream-colored scales. Forewing light gray, light gray brown, or brown; basal area flecked with few dark scales; median area usually slightly darker than either basal or subterminal areas, but not contrasting; discal dot absent, or at most a small white speck; postmedial line waved or not, followed by thin light band; apex of wing usually slightly darker than remainder of wing. Hindwing dull gray brown; usually yellowish patch in anal angle following postmedial line, bordered by brown; usually series of strong black dots along outer margin. Below forewing with light band in subterminal area; center of wing dull black; discal dot of hindwing a black blotch or vague black circle.

Male genitalia (figs. 554, 554a).--Shapes of juxta and valve will identify this species.

Male eighth sternite (fig. 576).

Female (fig. 136).--Forewing light brown, red brown, orange brown, or gray; discal dot usually a white spot, more distinct than in male; postmedial line waved or not; outer margin of wing more angulate than in male.

Female genitalia (fig. 972).

Variation.--This is another variable species, but because of the paucity of specimens it is difficult to characterize the variation. The coloration of the females is particularly variable and ranges through all possible shades of brown. The males are not as variable. The males from Dominica are the most clearly marked, and those from Puerto Rico have fuzzy looking, indistinct markings. The single male from Antigua is intermediate.

Types.--Herrich-Schaeffer based rectisectaria on a female from "Bresil," but the specimen illustrated is clearly this species. The type of campinaria is a male from "Amer. Aeq." I do not know the location of either type.

Discussion.--This species occurs in the Lesser Antilles from Puerto Rico to Dominica, and is known from few specimens. Either it is rare, or it occurs in areas not commonly collected. I suspect it may be found in coastal areas.

Specimens examined.--13 males and 4 females.

PUERTO RICO. Coamo Springs; Bayanon; Guajataca Forest, Isabela; Guanica Insular Forest. ST. CROIX. Mt. Eagle. ANTIGUA. "Antigua." DOMINICA. Macoucheri; "Dominica."

Pero sella Poole, NEW SPECIES

Male (fig. 137).--Antennae pectinate, strongly cream colored, particularly shaft dorsally. Legs cream colored, very slightly speckled with gray brown. Forewing light brown to gray brown; basal area usually light gray brown heavily scaled with dark brown; antemedial line dark brown, distinct; median area dark gray brown, but sometimes brown, darker than either basal or subterminal areas; discal dot at most a vague light spot; postmedial line always waved, never straight, followed by thin slightly lighter band; subterminal area gray brown, usually with some dark blotches toward inner margin; apex usually slightly darker than remainder of subterminal area. Hindwing dull light gray brown; yellow patch in anal angle following postmedial line, accented on outer side with brown; postmedial line brown. Below light gray brown to olive brown; discal dot of hindwing a black circle; black patch in anal angle of hindwing.

Male genitalia (figs. 555, 555a).--Shapes of valve and juxta are characteristic of species.

Male eighth sternite (fig. 577).

Female.--Unknown.

Variation.--The maculation of the series of males is consistent, but the coloration varies from light brown to gray brown heavily suffused with dark brown. The dark brown form is most common, although there is no clear-cut distinction between light and dark forms.

Types.--Holotype: Male, La Viste and vic., La Selle Range, Haiti, 5-7000 ft., Sept. 16-23, 1934, M. Bates. This type is in the Museum of Comparative Zoology. Paratypes: 7 males from the type locality are in the Museum of Comparative Zoology.

Discussion.--This is the largest species of the complex and is distinctive.

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Specimens examined.--8 males.

HAITI. La Viste and vic., La Selle, 5-7000 ft.

Pero tana Poole, NEW SPECIES

Male (fig. 138).--Antennae pectinate; shaft cream colored dorsally. Legs light brown, flecked with few dark brown scales. Forewing light tan; basal area light tan, concolorous with remainder of wing; antemedial line light yellow brown; median area light tan, not contrasting with either subterminal area or basal area; discal dot a small, vague, dark gray spot; postmedial line light yellow brown, straight, contrasting; subterminal area light tan with series of dark blotches in middle, particularly toward costa; fringe dark brown. Hindwing dull tan; discal dot a black spot; postmedial line brown, but clear cut only in anal angle; anal angle lighter than remainder of wing. Below tan; discal dot of hindwing a large gray spot, circled with black; postmedial lines of both forewing and hindwing yellow brown, but weak.

Male genitalia.--Unknown.

Male eighth sternite.--Unknown.

Female (fig. 139).--Forewing maculation as in male, but purple brown, not light tan; postmedial line not yellow brown, not contrasting; antemedial line slightly shaded with blue gray.

Female genitalia (fig. 973).

Types.--Holotype: Female, Nassau, Bahamas, 18-XII-1902, J.L. Bonhote, in British Museum of Natural History. Allotype: Male, Bahamas, G. Carter, in British Museum of Natural History.

Discussion.--I have made the female the type of this species because the male's abdomen is missing. The tan female genitalia are distinct from anything else in the complex. The tan of the single male is distinctive.

Specimens examined.--1 male and 1 female, December.

BAHAMAS. Nassau; "Bahamas."

Pero lastima Poole, NEW SPECIES

Male (fig. 140).--Antennae pectinate. Forewing purple brown to gray brown, variable; basal area not contrasting with median area; antemedial line not accented with white; postmedial line usually angulate, never completely straight. Hindwing violet brown; postmedial line usually obscure or poorly developed; anal angle with yellow-orange blotch, edged by dark brown shade and two black dots along outer margin. Below almost uniform gray brown with only contrasting marking the large, black discal dot of hindwing; series of black dots along outer margin of hindwing.

Male genitalia (figs. 556, 556a).--Shapes of juxta and costa of valve will distinguish this species from others in complex.

Male eighth sternite (fig. 578).

Female (fig. 141).--Forewing different from that of male, either dark red brown or light brown; in reddish specimens a clay-colored area in subterminal area following postmedial line; postmedial line straighter in light brown specimens; discal dot usually circled with vague ring.

Female genitalia (fig. 974).

Variation.--A single specimen from the Bahamas is light tan and the discal dot is all white, not circled with black on the forewing above. Variation in the Florida specimens is given in the description.

Types.--Holotype: Male, Key Largo, Monroe Co., Florida, 25-VI-1966, Mrs. Spencer Kemp, in U.S. National Museum. Allotype: Female from type locality also in U.S. National Museum. Paratypes: 1 male from type locality in each of following collections: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; 14 males and 1 female from type locality in collection of C.P. Kimball.

Discussion.--The single female from Grand Cayman Island may not belong to this species, but the female genitalia would place it here. It is the lightest and brightest specimen I have seen of lastima. This species has usually been misidentified in collections as atrocolorata.

Specimens examined.--41 males and 8 females, April-November.

UNITED STATES. Florida: Key Largo, Monroe Co.; Tavernier, Monroe Co. BAHAMAS. Georgetown, Grand Cayman.

Pero amnicincta Prout

Pero amnicincta Prout, 1910b:215, fig. 32, pl. 48.

Male (fig. 142).--Antennae serrate. Palpi dark brown. Legs brown, speckled with cream-colored scales. Forewing dark brown, light in parts of some specimens; basal and median areas almost concolorous, but median area usually slightly darker, particularly along postmedial line; discal dot a black dot or two black dots connected by line, never very conspicuous; subterminal area lighter than median area, flecked with darker scales and with vague darker band following postmedial line. Hindwing brown with dark postmedial line followed by vague light band; subterminal area slightly browner in anal angle; two black dots along outer margin in anal angle. Below almost uniform brown with postmedial lines of forewing and hindwing dark brown; postmedial line of hindwing waved.

Male genitalia (figs. 557, 557a).--Genitalia of amnicincta differ from those of norma by shape of tip of valve.

Female.--Unknown.

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Type.--The type of amnicincta is a male from Buenos Aires, Argentina, and is in the British Museum of Natural History.

Discussion.--Superficially norma and amnicincta are different, but the male genitalia are similar.

Specimens examined.--5 males, March-October.

ARGENTINA. Buenos Aires: Buenos Aires; Mendoza: Mendoza; Neuquen: Cipolletti; Neuquen.

Pero norma Prout

Pero norma Prout, 1910b:316, pl. 48, fig. 1.

Male (fig. 143).--Antennae heavily serrate. Palpi light gray brown, speckled with brown. Forewing almost concolorous; basal area slightly lighter along antemedial line; basal area with outer one-fifth darker than inner four-fifths; discal dot small, black; subterminal area with dark shade in middle just following postmedial line; this band followed by light band, and remainder of area dark. Hindwing light brown; postmedial line dark brown followed by vague light band; obscure light patch in anal angle followed by dark brown band and two black dots along outer margin. Below almost uniformly light gray brown; hindwing with large black discal dot and dark brown, waved postmedial line; brown blotch in anal angle in subterminal area.

Male genitalia (figs. 558, 558a).--Species may be distinguished from preceding by shape of apex of valve.

Female (fig. 144).--Antenna simple. Forewing similar to that of male, but lines stronger.

Female genitalia (fig. 975).

Variation.--This species is variable, but is usually dark brown with the median area in shades of brown, from a light bronzy brown, as in the type, to dark brown.

Type.--Prout described norma from a single male from Rodeo del Medio, Argentina, now in the British Museum of Natural History.

Discussion.--Pero norma is known only from Argentina. The male genitalic indicate a close relationship with amnicincta.

Specimens examined.--12 males and 6 females, March-September.

ARGENTINA. Buenos Aires: Gran Choco, nr. Florencio; Cordoba: Cordova; Corrientes: Goya; Entre Ríos: La Paz; Parana; La Rioja: La Rioja; Mendoza: Rodeo del Medio; San Rafael, Colonia areas; Santa Fe: Villa Ana; Tucumán: Tucuman.

Pero constrictifascia (Warren), NEW COMBINATION

Azelina constrictifascia Warren, 1897:487.

Male (fig. 145).--Forewing light brown, basal area light brown, with dark brown band from about middle of basal area to inner margin; base of wing also brown; median area brown, contrasting with remainder of wing; discal dot a black point; two white spots in median area at costa in area formed by angulation of postmedial line; subterminal area light brown, but scaled with darker brown and with obscure variegation of light and dark areas; apex of wing darker than remainder of subterminal area, concolorous with median area. Hindwing light brown with slight orange tint, usually darker toward base; postmedial line present, light, but not contrasting; two black dots along outer margin near anal angle. Below light brown, scaled slightly with black except for outer part of subterminal area of hindwing; discal dots black; postmedial lines white, conspicuous to vague depending on specimen. Abdomen brown with apex lighter brown.

Male genitalia (figs. 559, 559a).

Female.--Larger than male, but otherwise similar.

Female genitalia (fig. 976).

Variation.--There seems to be some variation in the dark color of the median area of the forewing above, but it is not great and does not seem to follow any geographical pattern.

Type.--Warren described constrictifascia from two males from "San Augustin, Mapiri," Bolivia. The specimen with Warren's type label in the British Museum of Natural History is designated as the lectotype.

Discussion.--This is an unusual species and I am not certain about its affinities. Its distribution is centered in the Amazon Basin and extends to the east slope of the Andes on one side and the Guianas on the other.

Specimens examined.--90 males and 3 females, all year.

FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. BRAZIL. Amazonas: Fonte Boa, Upper Amazon; Santo Antonio do Javary, Upper Amazon; Sao Paulo de Olivenca. BOLIVIA. Cochabamba: Chimate, 700 m., 760 m.; Rio Chimate, 1900 ft.; La Paz: Corvico [Coroico?], 1800 m.; Salampioni, Mapiri; San Augustin, Mapiri, 3500 ft.; San Ernesto, 1000 m., 68° W, 15° S; not located: Rio Veligre, 1905 ft. PERU. Loreto: Contamana, R. Ucayali; Rio Pacaya, Lower Ucayali; Madre de Dios: Madre de Dios; Puno: Chaquimayo, 2500-3000 ft.; San Gabon, 2500 ft.; Yahuarmayo, 1200 ft.; La Union, R. Huacamayo, 2000 ft. ECUADOR. Napo-Pastaza: Sarayacu; Tungurahua: El Topo, Rio Pastaza, 4200 ft.

albivena Species Complex

This complex is difficult and consists of three superficially identical species. I have not been able to make a key to species based on superficial appearance, but the genitalia provide a satisfactory and easy way to separate the species. The apex of the male valve can usually be seen by brushing the

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scales away from the end of the abdomen, and the differences among the three species can be seen.

Pero solitaria (Schaus), NEW COMBINATION

Azelina solitaria Schaus, 1911:593.

Male (fig. 146).--Legs cream colored, spotted with dark brown. Forewing brown to dark brown, faded specimens lighter than fresh ones; basal area brown, clouded with gray, not strongly contrasting with median area; antemedial line dark and vague; median area darker than remainder of wing; median area dark brown in fresh specimens and usually strongly contrasting with subterminal area; discal dot absent; postmedial line light brown and almost straight, but bent in area of cell; subterminal area light brown to brown, usually with veins slightly accented; subterminal area scaled slightly with dark brown. Hindwing dark, dull brown; postmedial line light; light ill-defined patch in anal angle. Below wings brown, upper half of subterminal area of forewing darker; hindwing darker than forewing; postmedial lines in both wings light and conspicuous.

Male genitalia (figs. 560, 560a).--Apices of valves are characteristic of this species.

Female (fig. 147).--Forewing orange brown, darker when fresh, almost concolorous over entire wing; maculation as in male. Hindwing concolorous with forewing; light patch in anal angle lacking.

Female genitalia (fig. 977).

Variation.--Some specimens are slightly darker than others.

Type.--Schaus described this species from a female, although the original description is vague as to the number of specimens he had. The labeled type is in the U.S. National Museum.

Discussion.--Pero solitaria is primarily a Central American species, although it also occurs in Venezuela and Colombia. It is superficially almost identical to the next species, but usually can be separated from albivena. In albivena the veins on the forewing above are more strongly accented and the postmedial line of the hindwing is more strongly incurved than in solitaria. If the scales are brushed from the tip of the male abdomen, the end of the valve can be seen.

Specimens examined.--15 males and 18 females, all year.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft. GUATEMALA. Izabal: Cayuga. COSTA RICA. Not located: Banana River. PANAMA. Taboga Island, Gulf of Panama. VENEZUELA. Amazonas: Mt Marahuaca, North Slopes, Benitez Camp; Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Portochuelo Pass, 7 km. N. Maracay, 1200 m.; Carabobo: Las Quigas, San Esteban Valley. COLOMBIA. Magdalena: Santa Marta; Onca, Santa Marta, 2000 ft.; Vaupés: Ob. Rio Negro, 800 m.; not located: Medina.

Pero gapa Poole, NEW SPECIES

Male (fig. 148).--Identical with solitaria.

Male genitalia (figs. 561, 561a).--Characterized by bilobed uncus and shape of apex of valve.

Female.--Unknown.

Type.--Holotype: Male, Chanchamayo, [Junin], Peru, in U.S. National Museum.

Specimens examined.--2 males.

ECUADOR. No specific locality: Ecuador. PERU. Junin: Chanchamayo.

Pero albivena (Warren), NEW COMBINATION

Pergama albivena Warren, 1897:499.

Male (fig. 149).--Almost identical with solitaria. Forewing veins in subterminal area more strongly accented with brown than in solitaria. Hindwing postmedial line light, stronger than in solitaria, incurved.

Male genitalia (figs. 562, 562a).--Easily identified by shapes of apices of valves.

Female (fig. 150).--Similar to female of solitaria, but postmedial line of hindwing incurved as in male.

Female genitalia (fig. 978).

Variation.--The postmedial line of the hindwing is weaker than normal in some specimens, and these specimens are difficult to separate by superficial appearance from the preceding two species.

Type.--Warren described albivena from a male from "S. America," now in the British Museum of Natural History.

Discussion.--Pero albivena is widely distributed, but never common. The long pointed tip of the valve is characteristic of albivena and can usually be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--62 males and 5 females, all year.

BRITISH HONDURAS. Melinda, Stann Creek District; Orange Walk. PANAMA. Canal Zone: Barro Colorado Island; Panama: La Chorrera. VENEZUELA. Bolivar: La Union, Caura River; La Vuelta, Caura River; Carabobo: San Esteban Valley. TRINIDAD. Caparo. FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maroni. BRAZIL. Bahia: Cachimbo; Matto Grosso: Matto Grosso; Urucum, 15 mi. S. Corumba, 650 ft.; Paraná: Castro, 650 ft.; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Rio Janeiro; Santa Catarina: Iguassu, Parana; Jaragua do Sul; New Bremen, Rio Laeiss. PARAGUAY. Paraguarí: Sapucay; not located: Mborevo. URUGUAY. "Uruguay." BOLIVIA. Cochabamba: Region Chapare; Santa Cruz: Buenavista; Del Sara, 450 m.; Nuflo de Chavez, Esperanza. PERU. Junin: Chanchamayo; Loreto: Contamana,

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R. Ucayali. ECUADOR. Napo-Pastaza: Sarayacu. COLOMBIA. Magdalena: Onca, Santa Marta, 2000 ft.; not located: R. Araguaya Goyaz; Corcovado, 7000 ft.

stolidata Species Complex

This complex, including stolidata through spitzi, is particularly troublesome because it consists of several similar appearing species. Two or three of them (i.e., fusaria, bulba, and stolidata) seem to be common, but the others are apparently rare, although some species may be common in restricted localities. The most extraordinary modifications of the male genitalia occur in the rarer species, for example, diana, tridenta, and monstrosa. It would be interesting to know if this represents some type of specialization. The loss of the characteristic sexual dimorphism in spitzi is also remarkable.

This complex has several characters in common with the anceta complex of group 1, such as the shape of the aedeagus and the striate end plate, the villi-like projections of the vesica, and the outpocketing of the ductus bursae of the female genitalia. However, the projections of the apices of the valves are distinctive, and I believe that the complex is best placed here together with the other species of this group.

The species of the complex, although superficially similar, are identified by comparing the male genitalia with figures 563-574.

Pero stolidata (Guenée)

Azelina stolidata Guenée, 1857:158.

Male (fig. 151).—Legs dark brown, slightly speckled with cream color. Forewing dark brown; basal area yellow brown, but heavily shaded with dark brown, appearing dark brown and not contrasting with median area; median area dark brown, particularly outer one-third; discal dot small, inconspicuous; postmedial line distinct and light brown; subterminal area yellow brown with dark brown striations forming obscure line following angulations of postmedial line; apex of forewing dark brown. Hindwing dark brown, postmedial line moderately developed; light patch in anal angle. Below brown with slight purple tint, particularly on hindwing; forewing with subterminal area distinctly darker than remainder of wing; hindwing concolorous; postmedial lines of forewing and hindwing straight and contrasting.

Male genitalia (figs. 563, 563a).—Characterized by shape of various projections of apex of valves and shapes of subscaphium and uncus.

Male eighth tergite and sternite (figs. 579, 580).

Female (fig. 152).—Forewing strongest marking a distinct median line; median area sometimes with slight purple tinge, particularly in fresh specimens; postmedial line often with white dots on veins; angulation of outer margin of forewing better developed than in male. Below almost uniformly dull, red brown; forewing with subterminal area slightly darker than remainder of wing.

Female genitalia (fig. 979).

Variation.—In the series of specimens from Rancho Grande, Venezuela, there is some variation in the dark brown of the wings.

Type.—Lost, given in the description as "Colombie, un male."

Discussion.—Although the type of this species is lost, the description is clear enough to determine it as this species. Little is known except that it occurs in the Andes, following the chain of mountains into the northern Cordillera of Venezuela.

Specimens examined.—80 males and 22 females, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida. COLOMBIA. Cauca: Popayan; Tolima: Canon del Tolima, 1700 m.; no specific locality: "Colombie." ECUADOR. Loja: El Monje; Environs de Loja; Zamora: Zamora. PERU. Amazonas: Chachapoyas; Huambo, 3700 ft.; Cusco: Caradoc, Marcapata, 4000 ft.; Huánuco: Pozuzo, 900 m.; Tingo Maria; Junin: Chanchamayo; Puno: Chaupe, 6100 ft.; La Oroya, R. Inambari, 3100 ft.; San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.; not located: River Tabaconas, 6000 ft.; Tambo Enenas, Cam. Del Pichis. BOLIVIA. Cochabamba: Incachaca.

Pero diana Poole, NEW SPECIES

Male (fig. 153).—Almost identical with stolidata. Forewing maculation as in stolidata, but ground color darker, heavily suffused with dark brown, without bright appearance of stolidata. Below ground color brown, heavily suffused with dark brown, not purple brown.

Male genitalia (figs. 564, 564a).—Characterized by shapes of subscaphium and uncus.

Male eighth tergite and sternite.—As in stolidata.

Female.—Unknown.

Types.—Holotype: Male, Tingo Maria, [Huánuco], Peru, 17-XI-1949, H.A. Allard, in U.S. National Museum. Paratype: 1 male, Santo Domingo, Carabaya, [Puno], Peru, 6500 ft., in British Museum of Natural History.

Discussion.—This species is similar to stolidata, but is darker and duller appearing. The male genitalia are distinctive.

Specimens examined.—2 males, November.

PERU. Huánuco: Tingo Maria; Puno: Santo Domingo, Carabaya, 6500 ft.

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Pero bulba Poole, NEW SPECIES

Male (fig. 154).—Forewing much like that of stolidata, but smaller, duller, and markings on average darker; well-defined brown striations in subterminal area lacking, although dark markings present following postmedial line; projection of postmedial line between Cu_1 and 2A better developed than in stolidata; veins of forewing conspicuous, accented with cream color. Below darker than stolidata; postmedial line of hindwing slightly rounded.

Male genitalia (figs. 565, 565a).—Characterized by shapes of projections of left valve and uncus.

Male eighth tergite (fig. 581).—Knob-shaped end of eighth abdominal tergite is characteristic of species.

Female (fig. 155).—Forewing similar to that of stolidata except black shade on inner margin of discal dot. Below usually more heavily striate with dark brown than in stolidata.

Female genitalia (fig. 980).

Variation.—This is not a variable species. The population from Puntarenas, Costa Rica, is slightly larger than that from north of there, but this is based on only a few specimens. The intensity of brown striations on the dorsal surface of the forewing in the female is somewhat variable, but not conspicuously so. The ground color of males from Santa Marta, Colombia, is reddish and lighter than normal. The median area in these specimens is also conspicuously lighter, and in general these males appear much like females from Central America.

Types.—Holotype: Male, Puerto Elegio, Municipio Comaltepec, Oaxaca, Mexico, 2296 ft., E.C. Welling, 26-IX-1961, in American Museum of Natural History. Allotype: Female from type locality in American Museum of Natural History. Paratypes: 14 males from type locality in American Museum of Natural History.

Discussion.—Most of the dates of capture of this species are in October, November, and December; however, the specimens from Guatemala were taken in June, at the same time as specimens of fusaria. The knobbed end of the tergite in the male is characteristic and can be used to identify the species by brushing away the scales from the tip of the abdomen.

Specimens examined.—57 males and 10 females, all year, primarily October-December.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft.; Veracruz: Jalapa; Misantla; Orizaba. GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, 1350 m.; Baja Verapaz: Chejel; Quezaltenango: Cerro Zunnil, 4-5000 ft.; Sololá: Volcan de Atitlan, 25-3500 ft. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Sitio; San Jose; Tuis; Puntarenas: Puntarenas, Monteverde, 4600 ft. COLOMBIA. Cauca: Popayan; Magdalena: Vista Vieva near Santa Marta Mts.; Vaupés: Ob. Rio Negro, 800 m. PERU. Junin: Chanchamayo.

Pero muza Poole, NEW SPECIES

Male (fig. 156).—Forewing ground color brown, not yellow brown as in stolidata, without bright appearance of that species; contrasting black apex lacking; postmedial line followed by white line, not yellow brown. Below hindwing flecked with brown; postmedial line and veins not yellow brown.

Male genitalia (figs. 566, 566a).—Characterized by bifurcate processes of apex of valves; end plate of aedeagus compressed.

Male eighth tergite (fig. 582).—Tergite with tip sclerotized, but not in shape of knob.

Female (fig. 157).—Identical with female of bulba.

Female genitalia (fig. 981).

Types.—Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, R.W. Poole, August 2, 1967, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 1 male and 1 female from type locality in each of following collections: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology, Universidad Central de Venezuela; 2 males and 1 female from type locality in U.S. National Museum.

Discussion.—Pero muza was moderately common at Rancho Grande.

Specimens examined.—9 males and 8 females, June-August.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. COLOMBIA. Boyacá: Muzo.

Pero fusaria (Walker), NEW COMBINATION

Axelina fusaria Walker, 1860a:256.
Axelina adrastaria Oberthür, 1883:26, pl. 1, fig. 2. NEW SYNONYMY.
Axelina? nasuta Warren, 1895:138. NEW SYNONYMY.
Pero egens Dognin, 1912:150. NEW SYNONYMY.

Male (fig. 158).—Forewing slightly duller than in bulba; postmedial line interrupted where veins cross; projections of postmedial line between Cu_3 and 2A not as well pronounced as in bulba. Below postmedial line of hindwing not as well developed as in bulba; discal dot of forewing more likely to be absent than in bulba.

Male genitalia (figs. 567, 567a).—Easily identified by shapes of subscaphium and uncus.

Male eighth tergite and sternite.—As in stolidata.

Female (fig. 159).—Forewing darker than in bulba; projection of postmedial line between Cu_3 and 2A not as well developed. Below dark purplish, not brown.

Female genitalia (fig. 982).

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Variation.--There does not seem to be much variation within any one locality; however, this species exhibits geographical variation on a grand scale. Although fusaria is generally distinct from bulba where they occur together, in southern Brazil fusaria looks almost exactly like bulba except that the postmedial line does not have the projection developed between Cu_3 and 2A of the forewing. Specimens of fusaria from Rio Grande do Sul have a slight olive tint. The populations in northern Ecuador and southern Colombia are a very "fuzzy" gray and slightly more robust than any other known population. The Peruvian specimens from Chanchamayo, Peru, are like the Central American specimens.

Types.--The type of fusaria is a female from "Brazil" and is in the Hope Museum, Oxford University. Oberthür described adrastaria from a single male from Huambo, Amazonas, Peru, and this specimen is in the British Museum of Natural History. Azelina nasuta was based on a single female without data from the Felder collection and is in the British Museum of Natural History. The specimen is probably from Colombia. Dognin described egens from four males; the male with type number USNM 32389 and with the male genitalia on slide Capps 1923 is designated as the lectotype.

Discussion.--This species is exceedingly similar to bulba, although the male genitalia will readily separate them. In areas of Central America where they occur together, they can usually be distinguished superficially, but the Brazilian populations of fusaria are almost identical with those of bulba from Central America.

Specimens examined.--200 males and 36 females, all year.

MEXICO. Hidalgo: Zimapan. GUATEMALA. Alta Verapaz: Baleu, Municipio Can Cristobal, Verapaz, above 1350 m.; Izabal: Cayuga. BRITISH HONDURAS. Middlesex, Stann Creek District; Punta Gorda; Cayo; Orange Walk. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Puntarenas: Puntarenas, Monteverde, 4600 ft. HONDURAS. La Cambre. PANAMA. Chiriqui: Volcan de Chiriqui, 2-5000 ft.; not located: Rio Trinidad. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Mérida: Merida; Yaracuy: Aroa. TRINIDAD. Arima Valley, 800-1200 ft.; Caparo; Port of Spain. BRAZIL. Minas Gerais: Uberaba; Paraná: Parana; Rio Grande do Sul: Guarani; Pelotas; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Iguassu, Parana; Jaragua do Sul; Nova Bremen, 250 m.; Neu Bremen, Rio Laeiss; Rio Vermelho, 840 m.; Nuevo Teutonia; "St. Catherines;" São Paulo: Alto da Serra, Santos. PARAGUAY. Guairá: Independencia; Paraguarí: Sapucay; not located: Mborevo; Puerto Belloní. URUGUAY. "Uruguay." ARGENTINA. Misiones: Iguassu Falls, 1500 ft.; Iguazu Falls; not located: Puerto Bemberg. BOLIVIA. Cochabamba: Region Chapare, 400 m.; Santa Cruz: Rio Suruta, 400 m. PERU. Amazonas: Huambo, 3700 ft.; Junin: Chanchamayo, 1000 m.; Piura: Quiros. ECUADOR. Azuay: Sta. Isabel, 65 km. S.W. Cuenca, 600 m.; Bolívar: Balzapamba; Imbabura: Lita, 3000 ft.; Paramba, 1050 m.; Paramba, 3500 m.; Loja: Environs de Loja; Napo-Pastaza: Baeza; Zamora: Zamora; not located: Maranjapata, 1850 ft. COLOMBIA. Boyacá: Muzo, 400-800 m.; Muzo; Cauca: Guabinas, Rio Cauca; Popayan; Santa Rita, Rio Cauca; Juntas; Cundinamarca: Finca San Pablo, 3 km. N. Alban, 1800 m.; Santa Fe de Bogota; Canache; Valle de Cauca: Palmira; Yuntas pres Cali; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Colombia.

Pero vera Poole, NEW SPECIES

Male (fig. 160.).--Forewing almost identical with that of fusaria; inner half of median area becoming red brown in faded specimens. Below postmedial line of hindwing indistinct and preceded by dark shade.

Male genitalia (figs. 568, 568a).--Characterized by bifurcate uncus and shapes of apices of valves; end plate of aedeagus round, not square.

Male eighth tergite and sternite.--As in stolidata.

Female.--Identical with fusaria.

Female genitalia.--Unknown.

Types.--Holotype: Male, Municipio Acatenango, Quisache, Chimaltenango, Guatemala, 750 m., E.C. Welling, 10-XI-1966, in American Museum of Natural History. Allotype: Female, Orizaba, Veracruz, Mexico, Hoffmann, lacking abdomen, in American Museum of Natural History. Paratypes: 6 males from type locality in American Museum of Natural History.

Discussion.--The types of vera are dull dark black, but older specimens fade to red brown.

Specimens examined.--15 males and 1 female, July and November.

MEXICO. Mexico: Zacualpan; Veracruz: Jalapa; Orizaba; "Vera Cruz." GUATEMALA. Chimaltenango: Municipio Acatenango, Quisache, 750 m.

Pero tridenta Poole, NEW SPECIES

Male (fig. 161).--Forewing olive brown, basal area lighter than median area; subterminal area contrasting with median area; veins in subterminal area marked with cream; postmedial line concave between costa and M_1, followed by cream-colored shade; otherwise similar to stolidata.

Male genitalia (figs. 569, 569a).--Very characteristic, particularly shape of uncus, fuzzy subscaphium, and shape of end plate of aedeagus.

Male eighth tergite (fig. 583).

Female.--Unknown.

Type.--Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, R.W. Poole, June 8, 1967, in U.S. National Museum.

Discussion.--The appearance of tridenta is much like that of southern Brazil populations of fusaria, but this species has a distinctive appearance and can be

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identified by the markings on the veins and the light shade following the postmedial line of the forewing. Although not common, tridenta is widely distributed.

Specimens examined.—25 males, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: La Union, Caura River; Yaracuy: Aroa. BRAZIL. Paraná: Castro; Santa Catarina: Iguasu, Parana; São Paulo: Itapura; Sao Paulo. PARAGUAY. Paraguarí: Sapucay; not located: Mborevo. ARGENTINA. Misiones: Iguazu Falls. PERU. Puno: La Union, R. Huacamayo, 2000 ft. COLOMBIA. Boyacá: Muzo, 400-800 m.; no specific locality: Colombia.

Pero monstrosa Poole, NEW SPECIES

Male (fig. 162).—Forewing longer than in other members of this species complex; median area slightly lighter brown than in stolidata; postmedial line interrupted on veins. Below light brown, not purplish.

Male genitalia (figs. 570, 570a).—Easily identified by shape of apices of valves, shape of uncus, and inflated appearance of end plate of aedeagus.

Male eighth tergite and sternite.—Tip of tergite sclerotized, but otherwise identical with that of stolidata.

Female.—Unknown.

Types.—Holotype: Male, Yahuarmayo, [Puno], Peru, 1200 ft., Watkins, in British Museum of Natural History. Paratypes: From type locality, 1 male in American Museum of Natural History and 3 males in British Museum of Natural History; La Union, R. Huacamayo, [Puno], Peru, 2000 ft., 1 male in British Museum of Natural History; Rio Huacamayo, [Puno], Peru, 1 male in U.S. National Museum; Santo Domingo, [Puno], Peru, 6500 ft., 1 male in British Museum of Natural History.

Discussion.—The wing shape of this species is probably an allometric modification of the stolidata wing. The male genitalia are also distinctively shaped.

Specimens examined.—9 males, all year.

COLOMBIA. Vaupés: Ob. Rio Negro, 800 m. PERU. Puno: La Union, R. Huacamayo, 2000 ft.; R. Huacamayo; Santo Domingo, 6500 ft.; Yahuarmayo, 1200 ft.; no specific locality: Peru.

Pero spitzi Prout

Pero spitzi Prout, 1928:63.

Male (fig. 163).—Legs cream colored. Forewing light gray; basal area light cream color but completely suffused with violet brown; median area violet brown, outer one-third dark brown; subterminal area light gray, strongly contrasting with remainder of wing, slightly flecked with brown, particularly as vague band following postmedial line; apex not dark as in stolidata. Hindwing gray heavily shaded with brown. Below gray with thick red-brown shade following postmedial lines in forewing and hindwing; discal dot of hindwing absent.

Male genitalia (figs. 571, 571a).—Characterized by shape of uncus and ends of valves. End plate of aedeagus not developed and part of vesica heavily sclerotized and with apical group of spines.

Male eighth sternite and tergite (figs. 586, 587).

Female.—Similar to male, but perhaps slightly larger.

Female genitalia (fig. 983).

Variation.—Some specimens are slightly grayer than others.

Types.—Prout described spitzi from several specimens from Brazil, but he stated that the type is from Alto da Serra, São Paulo. The male from that locality with Prout's type label is designated as the lectotype.

Discussion.—This is the most aberrant species of the stolidata complex, and its light gray is characteristic. The end plate of the aedeagus of the male genitalia is not present as in other members of the complex, and the males and females are not dimorphic.

Specimens examined.—16 males and 1 female, all year.

BRAZIL. Minas Gerais: Minas Geraes; Paraná: Castro, 950 m.; Rio de Janeiro: Rio; Santa Catarina: Jaragua do Sul; Neu Bremen, Rio Laeiss; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Alto da Serra, 800 m.; Boraceia, Salesopolis, 800 m.; Serro do Cubotas.

Pero contrasta Poole, NEW SPECIES

Male.—Forewing light gray to gray; basal area light gray, slightly flecked with dark brown; antemedial line with its projection in discal cell followed by blackish shade; median area red brown or dark brown, except around discal dot; discal dot black; subterminal area gray with few black and red-brown scales. Hindwing gray with brown flecking; postmedial line light gray, preceded by brown shade. Below light gray with red-brown scales scattered over both wings.

Male genitalia (figs. 572, 572a).—Characterized by shapes of valve, juxta, and uncus.

Male eighth tergite and sternite (figs. 584, 585).

Female (fig. 164).—Similar to male.

Female genitalia (fig. 984).

Variation.—The male from French Guiana has a reddish tint, but the holotype and allotype from Venezuela are both gray brown. The female from

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Paraguay, if it belongs to this species, is larger and darker than the female from Venezuela.

Types.—Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, R.W. Poole, June 7, 1967, in U.S. National Museum. Allotype: From type locality, female, also in U.S. National Museum.

Discussion.—This species may be variable, but it is known from a few specimens.

Specimens examined.—2 males and 2 females, June.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. FRENCH GUIANA. St. Jean, Maroni. PARAGUAY. No specific locality: Paraguay.

Pero collenettei Prout

Pero collenettei Prout, 1934:116.

Male (fig. 165).—Forewing light brown to brown; basal area slightly lighter than median area, but darker than subterminal area; median area dark brown to black brown; discal dot absent; subterminal area light brown to brown; apex flecked with black scales. Hindwing dull brown to gray brown; postmedial line light; anal angle lighter than remainder of subterminal area, varying from light brown to brown. Below gray brown speckled with brown; upper half of subterminal area of forewing rusty brown; subterminal area of hindwing also rusty brown; discal dot of hindwing black, but sometimes not well developed, white.

Male genitalia (figs. 573, 573a).

Female.—Unknown.

Variation.—Two of the three specimens are light brown, but the male from Rio de Janeiro is darker and strongly marked below.

Type.—Prout described collenettei from a single male from Urucum, Matto Grosso, Brazil, in the British Museum of Natural History.

Discussion.—Although collenettei is known only from three males, it is probably widely distributed in southern Brazil and Argentina. It resembles most of the species of the stolidata complex, but it is lighter brown and even the darkest male is not as dark as any of these. The male genitalia indicate a relationship to contrasta.

Specimens examined.—3 males, November.

BRAZIL. Matto Grosso: Urucum, 15 mi. S. Corumba, 650 ft.; Rio de Janeiro: Corcovado Forest, Rio de Janeiro. ARGENTINA. Tucumán: Sierra de la Ramada, 650 m.

Pero pernamba Poole, NEW SPECIES

Male (fig. 166).—Antennae pectinate. Palpi very light brown. Legs cream colored to light brown, spotted with few dark scales. Forewing tan with slight orange tint; basal area not contrasting with median area, but slightly lighter; antemedial line dark gray; median area lighter along costa, darker along postmedial line; discal dot black but vague; subterminal area lighter than median, vaguely mottled with dark and light areas. Hindwing very light brown, almost white; inner margin dark tan; postmedial line distinct only on inner margin; strong series of black dots along outer margin. Below almost uniform dull white spotted with brown scales; postmedial line of forewing marked on costa, but otherwise absent; discal dot of hindwing present, black, but not strong; series of large, black dots along outer margin.

Male genitalia (figs. 574, 574a).

Male eighth sternite.—As in contrasta.

Female (fig. 167).—Similar to male but darker, grayer.

Female genitalia (fig. 985).

Types.—Holotype: Male, Sierra de Bernada, Pernambuco, Brazil, L. Gounelle, in British Museum of Natural History. Allotype: Female, from type locality, also in British Museum of Natural History.

Discussion.—This is a distinctive species, but it is known only from the male and female types. The female is similar to the female of contrasta, but the male is unusual. It remains to be seen if this species is as variable in color as collenettei.

Specimens examined.—1 male and 1 female.

BRAZIL. Pernambuco: Sierra de Bernada.

Pero fusca (Warren)

Azelina fusca Warren, 1901:483.

Female (fig. 168).—Forewing light brown, flecked with dark brown; antemedial line brown, diffuse; median area more heavily flecked toward postmedial line; discal dot double, two small brown spots, upper slightly larger than lower; postmedial line brown, followed by thin light band; subterminal area light brown flecked with brown scales, but in no definite pattern. Hindwing light brown, flecked with brown scales; postmedial line obsolescent.

Female genitalia (fig. 986).

Male.—Unknown.

Type.—Described from single female from Paraná, Entre Rios, Argentina, now in British Museum of Natural History.

Discussion.—This species is known only from a single battered female. Its systematic position is problematical, but the female genitalia indicate that it belongs to this species group. I have not been able to associate it with the males of any known species from Argentina.

Specimen examined.—1 female.

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ARGENTINA. Entre Ríos: Parana.

GROUP 5

Group 5 is an assemblage of brightly colored species, some of which are among the most common species of Pero in South and Central America. The shapes of the ventral process of the valve of the male genitalia and of the eighth abdominal sternite of the male indicate a close relationship with the species at the end of group 1. The speciosata complex contains several species, many of them superficially similar and often difficult to separate. There may be one or two undiscovered sibling species here, and the two species otra and polygonaria certainly deserve the name.

Two superficially distinct groups are included here, one clustered around polygonaria and the other around speciosata. The genitalia of amanda and pumaria are intermediate between the genitalia of these two subgroups, and both subgroups have similarly shaped juxtae.

Pero plagodiata (Warren), NEW COMBINATION

Pergama plagodiata Warren, 1897:500.

Male (fig. 169).--Palpi brown. Legs cream colored. Thorax brown, tegulae grayish. Forewing yellow with brown striations; basal area small and brownish, darker toward inner margin; antemedial line double; median area yellow with fine brown striations; discal dot double, small, black; postmedial line vague or almost absent, usually indicated by concentration of brown striations, often with slightly pink or violet tint toward inner margin; subterminal area similar to median area; series of small black dots along outer margin. Hindwing yellow with smooth brown band representing postmedial line; slightly pinkish toward anal angle; fringe darker toward anal angle. Below yellow, without brown striations; postmedial line of forewing brown, distinct, but only toward costa; subterminal area of hindwing darker. Abdomen light brown with double line running length of dorsum; end lighter.

Male genitalia (figs. 588, 588a).

Female.--Same as male.

Female genitalia (fig. 987).

Variation.--This is a nonvariable species, although some specimens are lighter than others. One specimen from Ecuador has the postmedial line of the forewing distinct and brown and the postmedial band of the hindwing orange tinted.

Type.--Warren described plagodiata from "one male from Cucuta, Venezuela," but the specimen bearing Warren's type label in the British Museum of Natural History is labeled "Bogota." The Cucuta specimen is in the collection, but is not marked as type and has several pinholes in the label indicating that the label has been removed and replaced several times. The specimen from Cucuta, Venezuela [department of Santander, Colombia], is designated as the lectotype. Because both specimens are the same species and come from localities close to each other, there should be no difficulty in the fixation of this type.

Discussion.--Pero plagodiata is easily recognized by its yellow coloration. Although it is widely distributed, it does not seem to be common except in Venezuela.

Specimens examined.--138 males and 11 females, all year.

MEXICO. Oaxaca: Cerro Pelon, Municipio Yolox, 7052 ft.; Puerto Elegio, Municipio Comaltepec, 2300 ft.; Veracruz: Cordoba; Orizaba; "Vera Cruz." GUATEMALA. Izabal: Cayuga. SAN SALVADOR. "San Salvador." COSTA RICA. Cartago: Juan Vinas, 2500 ft. PANAMA. Chiriqui: Chiriqui; not located: Lino, 500 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: La Union, Caura River; Carabobo: San Esteban Valley, Las Quigas; Lara: Terepaima, 10 km. S. Barquisimeto; Yaracuy: Aroa. TRINIDAD. Arima Valley, 800-1200 ft.; Arima Valley. GUYANA. Potaro; "British Guiana." BRAZIL. Matto Grosso: Burity, 30 mi. N.E. Cuyaba, 2250 ft.; Rio de Janeiro: Petropolis; Santa Catarina: Blumenau; Jaragua do Sul; Joinville; Rio Laeiss, Blumenau; "St. Catherines"; São Paulo: Alto da Serra; Boraceia, Salesopolis; Sao Paulo; Serra do Cubotas. BOLIVIA. Santa Cruz: "St. Cruz." PERU. Amazonas: Rentema Falls, Upper Maranon, 1000 ft.; Huánuco: Pozuzo; Tingo Maria; Junin: Chanchamayo, 2000 m.; Satipo; Loreto: Rio Ucayali; Madre de Dios: Avispes; Puno: La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft. ECUADOR. El Oro: Zaruma, to Machala, 850 m.; Napo-Pastaza: Canelos, Rio Bobonaza, 2100 ft. COLOMBIA. Boyacá: Muzo, 400-800 m.; Cundinamarca: Medina, 500 m.; Bogota; Santander: Cucuta; Vaupés: Ob. Rio Negro, 800 m.

Pero otra Poole, NEW SPECIES

Male (fig. 171).--Palpi orange brown. Legs orange brown slightly flecked with brown, inner faces lighter. Thorax dark brown, darker than either wings or abdomen. Forewing orange brown except contrasting basal area; antemedial line double, dark brown; median area orange brown, heavily striate with dark brown; discal dot double, small, black; postmedial line indistinct, double, slightly yellowish between inner and outer line; subterminal area similar to median area; series of black dots along outer margin. Hindwing orange brown to straw yellow, heavily flecked with dark gray; postmedial line a diffuse, wide, dark gray band, merging with dark inner margin of wing, slightly darker in anal angle. Below yellow orange, brighter than above; apex of forewing orange, costa light gray, and remainder of wing dull, light yellow, none of these areas contrasting; postmedial line of forewing dull gray, partially interrupted by veins; hindwing orangish, heavily flecked with dark, dull gray; postmedial line light gray, but not contrasting; discal dot a single dull black point. Abdomen orange brown with double line dorsally.

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Male genitalia (figs. 589, 589a-b).--Shape of costal fold will separate this species from polygonaria and arciogona.

Female.--Similar to male, but usually slightly larger, darker; postmedial line of hindwing more diffuse.

Female genitalia (fig. 988).

Variation.--There is variation in the distinctness of the postmedial line of the forewing and also in the color of the wings, but as a whole this is not a variable species.

Types.--Holotype: Male, Tingo Maria, [Huánuco], Peru, 22-XI-1949, H.A. Allard, in U.S. National Museum. Allotype: Female, Coosnipata, Paucartambo, Cusco, Peru, in American Museum of Natural History. Paratypes: 17 males from type locality in U.S. National Museum.

Discussion.--This species and polygonaria are impossible to separate except by the male genitalia. Of the two species, otra has a more restricted range, and outside of central and southern Peru and Bolivia it is fairly safe to assume that one is dealing with polygonaria. Within the range of otra both species occur together in the same places and at the same times. Sometimes the shape of the ventral process of the male valve can be seen by brushing away the scales from the tip of the abdomen, but this character is often hard to evaluate without a slide mount.

Specimens examined.--50 males and 3 females, all year.

BOLIVIA. Cochabamba: Incachaca; Santa Cruz: Del Sara, 450 m. PERU. Cusco: Coosnipata, Paucartambo; Quincemil, 2400 ft.; Huánuco: Tingo Maria; Junin: La Merced, 3000-4500 ft.; Puno: La Oroya, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; Santo Domingo, 6500 ft.; San Gabon, 2500 ft.; not located: Pumayaca. ECUADOR. Zamora: Palanda. BRAZIL. Amazonas: Sao Paulo de Olivenca.

Pero polygonaria (Herrich-Schaeffer)

Pergama polygonaria Herrich-Schaeffer, 1855b: figs. 412, 413.

Male (fig. 170).--Superficially identical with otra.

Male genitalia (figs. 590, 590a-b).--Shape of costal fold will separate polygonaria from otra and arciogona.

Female.--Identical with female of otra.

Female genitalia (fig. 989).

Variation.--There is little variation in polygonaria, but the postmedial lines of the forewing and hindwing vary slightly in distinctness.

Type.--Pero polygonaria was described from a specimen listed as "Am. Aequinoct. Coll. Kef. m." The specimen illustrated by Herrich-Schaeffer is a male, and if in existence should be in the University Museum of Zoology, Halle, East Germany. I have assigned the name to the common, widespread species of this complex as the most likely and desirable choice, but I have not seen the type.

Discussion.--Pero polygonaria is one of the most common and most widespread Pero species in tropical America. It is almost impossible to distinguish it from otra, but the male and female genitalia are different. Where the two species occur together, it is sometimes possible to separate them by brushing away the scales from the tip of the male abdomen and looking for the ventral processes of the valves. This method cannot be completely relied on, and when an exact determination is needed, a genitalia slide should be made.

Specimens examined.--255 males and 59 females, all year.

MEXICO. Chiapas: Marvellas; Santa Anita; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; Veracruz: Jalapa; Misantla; Orizaba. BRITISH HONDURAS. Middlesex, Stann Creek District. GUATEMALA. Baja Verapaz: Chejel; Izabal: Cayuga; Quirigua; Quezaltenango: Cerro Zunil, 4000 ft. HONDURAS. Lancetilla. NICARAGUA. Eden, 14° N 84° W. COSTA RICA. Cartago: Cachi; Juan Vinas; Orosi, 1200 m.; San Jose; Tuis; not located: Avangarez; Banana River; Esperanza; Candeleria Mts.; no specific locality: Costa Rica. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui; Volcan de Chiriqui, 2-3000 ft.; V. de Chiriqui, 5000-8000 ft.; Volcan de Chiriqui; not located: Lino, 500 m.; Porto Bello. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: La Union, Caura River; La Vuelta, Caura River; Suapure, Caura River; Carabobo: San Esteban Valley; Yaracuy: Aroa; Palma Sola; not located: Las Cruces, Colon, 250-750 ft. TRINIDAD. Arima Valley, 800-1200 ft.; Caparo. GUYANA. Omai; Potaro; "British Guiana." FRENCH GUIANA. St. Jean, Maroni; St. Laurent, Maron. BRAZIL. Amazonas: Allianca below S. Antonio, Rio Madeira; Codajas, Upper Amazon; Fonte Boa, Upper Amazon; R. Madeira; San Joas, Solimoes; Matto Grosso: Matto Grosso; Minas Gerais: San Jacinto Valley; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Rio Grande do Sul: Pelotas; Santa Catarina: Iguassu, Parana; Neuvo Teutonia; Nova Bremen, 250 m.; Rio Laeiss, Blumenau; "St. Catherines"; Jaragua do Sul; São Paulo: Alto da Serra, Santos, 800 m.; Alto da Serra; Salto Grande, Paranapanema; Santos; Sao Paulo, 2500 ft. PARAGUAY. Paraguarí: Sapucay; not located: Caagazu; no specific locality: Paraguay. URUGUAY. Uruguay. ARGENTINA. Misiones: Iguazu Falls. BOLIVIA. Cochabamba: Chapare; R. Cristal Mayu, Chapare, 1000-2000 m. PERU. Cusco: Quincemil, 2400 ft.; Huánuco: Tingo Maria; Junin: Estancia Naranjal, San Ramon; La Merced, Chanchamayo; Satipo; Loreto: Rio Maranon; Rio Ucayali; Madre de Dios: Avispas; Puno: La Union, Rio Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6500 ft.; Tinguri, 3400 ft.; Yahuarmayo, 1200 ft.; not located: R. Tiputini, Rio Napo; Utcyacu, 5000 ft.; no specific locality: Peru. ECUADOR. Bolívar: La Chima, Los Rios; Chimborazo: Chimbo; Esmeraldas: R. Cayapas; Imbabura: Lita, 3000 ft.; Paramba; Sarayacu; not located: Hacienda Cayandeled, Rio Bamba, 4200 ft.

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COLOMBIA. Boyacá: Muzo, 400-800 m.; Cundinamarca: Bogota; Vaupés: Ob. Rio Negro, 800 m.; not located: Bogota to Buenaventura.

Pero arciogona Prout

Pero (Pergama) arciogona Prout, 1933:93.

Male (fig. 172).--Similar to preceding two species. Forewing lighter than that of either otra or polygonaria, but not as heavily striate with brown; antemedial line double and more sharply set off from both basal and median areas than in preceding two species; discal dot small, black points, smaller than in preceding two species; postmedial line double, distinctly filled with yellow. Hindwing yellow orange, not as heavily flecked with black as in otra and polygonaria; postmedial line double and distinct, inner line more so than outer line. Below almost smooth, dull yellow orange, without contrasts of polygonaria and without dark scaling.

Male genitalia (figs. 591, 591a, 592).--Shape of costal fold is distinctive.

Female.--Similar to female of polygonaria, but darker; postmedial lines of both forewing and hindwing double and distinct. Below smoother appearing than in polygonaria.

Female genitalia (fig. 990).

Variation.--Some specimens are more strongly marked than others, and a few have the postmedial line of the hindwing more diffuse than normal. Peruvian specimens are not as strongly marked as the Brazilian ones.

Type.--Prout described this species from several specimens, but stated that the type was from Alto da Serra, São Paulo, Brazil, October 1922. The male from this locality with Prout's type label in the British Museum of Natural History is designated as the lectotype.

Discussion.--Although similar to the preceding two species, this species can almost always be identified by its lighter, more distinct appearance and the double postmedial line of the hindwing. The characteristic shape of the costal fold of the male genitalia can often be seen in males by brushing away the scales from the end of the abdomen.

Specimens examined.--47 males and 27 females, all year.

BRAZIL. Minas Gerais: Uberaba; "Minas Geraes"; Paraná: Castro, 950 m.; Rio Grande do Sul: Guarani; Pelotas; Porto Alegre; "Rio Grande do Sul;" Santa Catarina: Iguasu, Parana; Jaragua do Sul; Nova Teutonia, 300-500 m.; Nova Teutonia; Rio Vermelho, 850 m.; São Paulo: Alto da Serra; Cantareira; Salesopolis; Santos; Sao Paulo; Ypiranga. PARAGUAY. Paraguarí: Sapucay. PERU. Huánuco: Pozuzo; Junin: Chanchamayo; no specific locality: Peru. ECUADOR. Tungurahua: Alpayacu, Rio Pastaza, 3600 ft.

Pero amanda (Druce), NEW COMBINATION

Azelina amanda Druce, 1898:533, pl. 98, fig. 20.
Pergama dissimilis Warren, 1905b:375. NEW SYNONYMY.
Pergama dissimilis ab. perfusa Warren, 1907:318.

Male (fig. 173).--Exceedingly variable species; described from Venezuelan specimens. Palpi brown to rust colored, most often orange or rust colored. Forewing variable, usually some shade of gray; basal area usually gray; upper part of antemedial line black and definite, but lower four-fifths obscure; median area usually light tan or salmon color, sometimes heavily suffused with gray; discal dot, if present, very obscure; postmedial line double, straight; subterminal area varying from uniform gray to almost yellow, usually variegated with light and dark patches. Hindwing light yellow to light tan, with black speckles; postmedial line double, dull white, almost straight; subterminal area with dark brown line from anal angle to about one-third width of wing. Below light yellow marked with either orange or rust red; forewing almost white along costa, and orange tinted along upper one-third of outer margin, color of these two areas varying from specimen to specimen; hindwing with postmedial line white; basal area lighter than subterminal area, although both are orange tinted to red.

Male genitalia (figs. 593, 593a-b).--May be separated from following species by shapes of ventral processes of valves.

Female (fig. 174).--Brown, not gray as in male. Forewing maculation in general black, variable in definition; basal area brown; antemedial line often double, strongly marked toward inner margin; discal dot distinct; subterminal area with light gray patch along postmedial line on inner margin, extending about one-half length of postmedial line. Hindwing as in male, but more orange. Below darker than male.

Female genitalia (fig. 991).

Variation.--Individual variation in this species is rampant. In the male the forewing varies from uniform gray to variegated with light yellow and the subterminal area from salmon to dark gray. The females vary in the intensity of the dark markings of the forewing. Below the postmedial line varies in clarity, and the anal angle may or may not have a very well-defined cream-colored patch. Some specimens are suffused with smoky brown, but almost all these specimens come from Central America. Geographical variation in the Guatemalan and British Honduras populations consists of a large number of males suffused with dark smoky gray. Some Cuban males have the median area almost orange and contrasting with the remainder of the wing. Southern Brazilian and Paraguayan specimens are smaller and have the median and basal areas very dark gray, contrasting with the lighter subterminal area.

Types.--Druce described amanda from a single female from "Jalapa, Mexico," now in the British Museum of Natural History. Pergama dissimilis was described from a single male from Chanchamayo, [Junin], Peru, and the aberration perfusa was based on four males from Sapucay, [Paraguarí], Paraguay, November 1904.

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The type of dissimilis is in the British Museum of Natural History.

Discussion.--Pero amanda is apparently common in most of Central and South America except the Andes, where possibly it is partially replaced by the next species. I believe it is most characteristic of lowland habitats, possibly secondary growth.

Specimens examined.--224 males and 74 females, all year.

CUBA. Barocoa; Central Soledad; Matanzas; Santiago de Cuba; San Blas St. Clara; Tanamo. MEXICO. Chiapas: La Granja; Mts., Soconusco; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; San Luis Potosí: Tamanzuchale; Tamaulipas: El Salto Falls, 26 mi. W. Antigua, Morelos, 2000 ft.; Veracruz: Jalapa; Misantla; 7 mi. S.W. Poza Rica, 200 ft.; Yucatan: Peto. BRITISH HONDURAS. Middlesex, Stann Creek District; Rio Grande. GUATEMALA. Baja Verapaz: Chejel; Izabal: Cayuga; Quirigua; Quezaltenango: Volcan Sta. Maria. COSTA RICA. Cartago: Juan Vinas; San Jose, 5000 ft.; San Jose; not located: Avangarez; no specific locality: Costa Rica. PANAMA. Canal Zone: Barro Colorado Island. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Bolívar: Caura Valley; Suapure, Caura River; Suapure; La Union, Caura River; La Vuelta, Caura River; Carabobo: San Esteban Valley, Las Quigas; Valencia; Federal District: Caracas; Mérida: Merida; Yaracuy: Aroa. TRINIDAD. Arima Valley. FRENCH GUIANA. Cayenne; St. Laurent, Maroni. BRAZIL. Minas Gerais: Uberaba; Vicosa; Paraná: Castro, 950 m.; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Rio Janeiro; Rio Grande do Sul: Guarani; Rondonia: Porto Velho; Santa Catarina: Iguassu, Parana; Jaragua do Sul; Nova Bremen, 250 m.; Neuvo Teutonia; São Paulo: Alto da Serra; Pennapolis, 450 m.; Salto Grande, Paranapanema; Sao Paulo; Ypiranga. PARAGUAY. Guairá: Independencia; Paraguarí: Sapucay; not located: Mbovero; Paso Zobai; Santo Barbara; no specific locality: Paraguay. URUGUAY. Uruguay. ARGENTINA. Misiones: Iguazu Falls; Parana, San Ignacio; Puerto Aguirre; not located: Misoyer. BOLIVIA. Santa Cruz: Buenavista, 750 m.; Del Sara, 450 m.; Nuflo de Chavez, Esperanza; Rio Suruta, 450 m.; Santa Cruz de la Sierra to S. Jose de Chiquitos. PERU. Junin: Chanchamayo, 1000 m; Chanchamayo; Perene River; no specific locality: Peru. COLOMBIA. Magdalena: Onca, St. Marta; Santander: Cucuta; Vaupés: Ob. Rio Negro, 800 m.

Pero pumaria (Felder and Rogenhofer), NEW COMBINATION

Pergama pumaria Felder and Rogenhofer, 1873: pl. 123, fig. 15.

Male (fig. 175).--Similar to amanda. Forewing identical with that of amanda, but without variation in colors of that species; basal area gray; median area light tan to salmon colored, but never suffused entirely with gray; subterminal area gray, variegated with yellow patches. Hindwing postmedial line concave, followed by strong black band; more heavily speckled with black than in amanda. Below postmedial line of hindwing more strongly incurved than in amanda.

Male genitalia (figs. 594, 594a-b).--Ventral process of valve will distinguish this species from amanda.

Female (fig. 176).--Similar to female of amanda, but postmedial line of hindwing concave, followed by strong black band.

Female genitalia (fig. 992).

Variation.--This species is much more uniform appearing than amanda, but there is some variation in the intensity of the dark band following the postmedial line of the hindwing.

Type.--Described from a single male from "Amazonas (Bates)," now in the British Museum of Natural History.

Discussion.--This species is most common in the interior of Peru, Bolivia, and Venezuela, but it extends into the Amazon Basin, the Andes, and southern Brazil. Pero amanda and pumaria have almost geographically exclusive ranges, although there are exceptions. The concave postmedial line of the hindwing is the best superficial character for separating pumaria from amanda, but the ventral process of the valve can often be seen by brushing away the scales from the end of the male abdomen.

Specimens examined.--124 males and 21 females, all year.

BRAZIL. Amazonas: Allianca below S. Antonio, Rio Madeira; Codajas, Upper Amazon; Fonte Boa; Manaos; Sao Paulo de Olivenca; Matto Grosso: Matto Grosso; Pará: Para; Santa Catarina: Blumenau, Neu Bremen; Hansa Humboldt, 60 m.; Jaragua do Sul; Rio Laeiss, Blumenau; São Paulo: Serra do Cubotas; no specific locality: Brasil. BOLIVIA. Cochabamba: Region Chapare, 400 m.; La Paz: Rio Chimate, 1900 ft.; Santa Cruz: Nuflo de Chavez, Esperanza. PERU. Junin: Satipo; Loreto: Caytamana, Rio Ucayali; Sapatiny, R. Purus; Puno: La Union, Rio Huacanayo, 2000 ft.; San Gabon, 1200 ft.; Santo Domingo, 6500 ft.; Yahuarmayo, 1200 ft. ECUADOR. No specific locality: Ecuador. COLOMBIA. Boyacá: Medina, 500 m.; Cundinamarca: Santa Fe de Bogota. VENEZUELA. Bolívar: La Union, Caura River; La Vuelta, Caura River; Carabobo: San Esteban Valley. GUYANA. Potaro.

speciosata Species Complex

Of all the species complexes of Pero this is one of the more perplexing. Most of the species are similar to each other superficially as are the male and female genitalia. Although in some instances, good genitalic characters are present, in others the differences are small. This is particularly true in pallidior, naranja, and suffusa. If one considers the large amount of geographical variation in the male genitalia of other species groups, these three species would be considered only racial variants if they did not occur together. The females are particularly difficult to distinguish without making preparations of the genitalia.

The best procedure for identifying species of this complex is to compare specimens to the illustrations

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and descriptions. The place of capture is also of great help. A key to males is given here, but it is based almost entirely on relative characters and will probably prove of limited value.

Most of the species are not variable, but clana is widely distributed, and in the Andes it has formed two distinctive populations. Most of the members of this complex are limited in distribution, and only pallidior and clana are widely distributed or common.

A key to males follows.

1. Hindwing light yellow to straw yellow 2

   Hindwing with distinct orange tint 4

2. Postmedial line of hindwing strongly concave; light yellow and brown species ..... delauta

   Postmedial line of hindwing not strongly concave; yellow to olive yellow 3

3. Strongly marked; patch on inner margin in basal area of forewing strongly contrasting with remainder of basal area; postmedial line of hindwing well marked and contrasting; hindwing flecked with gray 9

   Weakly marked; patch on inner margin of basal area of forewing not contrasting with remainder of basal area; postmedial line of hindwing not well marked; hindwing only weakly flecked with gray ..... suffusa

4. Hindwing dark orange and darkly scaled 5

   Hindwing light orange, not darkly scaled ... 7

5. Peru to Colombia 6

   Central America ..... cruza and costa

6. Light orange below; hindwing not darkly scaled above ..... clana

   Dark orange below; hindwing darkly scaled above ..... speciosata

7. Larger (35-40 mm); yellow; postmedial line of hindwing not distinct and contrasting ..... naranja

   Smaller (30-35 mm); more olive yellow than yellow; postmedial line of hindwing white, distinct, and contrasting 8

8. Postmedial line of hindwing strongly concave; hindwing distinctively flecked with brown; long ventral process of valve easily seen by brushing scales from end of abdomen ..... decora

   Postmedial line of hindwing not as strongly concave; hindwing not as dark or distinctively flecked with brown; long ventral process of valve absent ..... clana

9. Light orange below; hindwing above smooth appearing; postmedial line of hindwing more distinct, not heavily flecked with gray scales ..... clana

   Dark orange below; hindwing above rough appearing; postmedial line of hindwing less distinct, more heavily flecked with gray scales ..... pallidior

Pero pallidior (Thierry-Mieg), NEW COMBINATION and NEW STATUS

Azelina speciosata var. pallidior Thierry-Mieg, 1916:50.

Male (fig. 177).--Yellow to light brown. Palpi red brown. Legs light brown, inner faces of femora red brown. Thorax steel gray, with light brown median crest. Forewing basal area steel gray, with light brown median patch from inner margin to about two-thirds way to costa; olive colored between this patch and antemedial line; antemedial line double toward costa; median area salmon colored with many dark brown streaks; postmedial line almost even, curved, slightly waved in middle; subterminal area yellow brown, inner one-third lighter than outer two-thirds; light wavy line in middle of outer two-thirds of subterminal area, sometimes separate from inner third, but sometimes anastomosing with it; small brown patch on costa in subterminal area. Hindwing yellowish light brown; postmedian line a white band bounded on both sides by gray; wings speckled with gray spots; brown line in anal angle extending about one-third length of subterminal area; postmedial line marked by two brown spots on inner margin. Below light brown, heavily marked with orange or red brown; costa of forewing grayish; top half of subterminal area red or orange with most of subterminal area and part of median area occupied by large light brown patch; hindwing orange to red, flecked with gray; postmedial line of hindwing a white line bordered with gray; inner margin light brown to white. Abdomen gray cream color with sides marked with red.

Male genitalia (figs. 595, 595a).--Ventral process of valve forms more obtuse angle than in next species. Shape of costal fold is also slightly different.

Female (fig. 178).--Forewing maculation as in male, but coloration salmon to red brown; subterminal area with olive-gray patch along postmedial line from inner margin to about one-third its length; two darker patches along outer margin. Hindwing darker than male's. Below as in male, but much darker. Abdomen red brown.

Female genitalia (fig. 993).

Variation.--Pero pallidior is not variable. The light line in the middle of the subterminal area of

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the forewing is more distinct in some specimens than in others, and in some specimens tends to diffuse into the light patch along the postmedial line. The intensity of the color below varies from orange to red. The Central American populations tend to be slightly smaller than the majority of populations, and the hindwing is slightly more orange tinted.

Types.—Thierry-Mieg described his variety pallidior from "Perou, Bolivie, Equteur, etc., plusierus males, ma. coll." The type series, if still in existence, will probably be in the Muséum National d'Histoire Naturelle in Paris. The description clearly fits this species although I have not seen the types.

Discussion.—Pero pallidior is widespread but is probably most common in montane forest.

Specimens examined.—243 males and 22 females, all year.

COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Tuis; Limón: Guapiles. PANAMA. Chiriqui: Volcan de Chiriqui; not located: Lino, 500 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. BRAZIL. Santa Catarina: Jaragua do Sul; Joinville; Rio Laeiss; Blumenau. BOLIVIA. Cochabamba: Charaplaya, 1300 m., 65° W, 16° S; Incachaca; Yunga da Espiritu Santo; La Paz: La Paz, 1000 m.; Yungas de la Paz, 1000 m.; Santa Cruz: Pto. Greether, Chilo, 250 m.; Rio Suruta, 400 m.; not located: Carahuarani, Chuquini, 3000 ft.; Chimate, 760 m.; Corvico, 1800 m.; Rio Songo; Salampioni, 800 m.; San Jacinto; no specific locality: Bolivia. PERU. Amazonas: Huambo, 3700 ft.; Cusco: Caradoc, Marcapata, 4500 ft.; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo; La Merced, 2-3000 ft.; Puno: Agualani, 9000 ft.; La Oroya, Rio Inambari, 3100 ft.; La Union, Rio Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Yahuarmayo, 1200 ft.; not located: Huallaga; Pampaconas River; Pumayaca; Quiroz; Rentema Falls, Upper Maranon, 1000 ft.; Upper Maranon; no specific locality: Peru. ECUADOR. Loja: El Monje, pres Loja; Loja; Zamora: Palanda; Zamora. COLOMBIA. Antioquia: Valpariso; Boyacá: Muzo, 400-800 m.; Cundinamarca: Pizagua; Vaupés: Ob. Rio Negro, 800 m.

Pero naranja Poole, NEW SPECIES

Male (fig. 179).—Almost identical with pallidior. Hindwing dorsally light orange, not light yellow brown. Below lighter than in pallidior.

Male genitalia (figs. 596, 596a).—Ventral processes of valves are closer together than in preceding species and costal fold is slightly different in shape.

Female.—Unknown.

Variation.—The color of the hindwing tends to vary, but it is never as light as in the preceding species.

Types.—Holotype: Male, Pozuzo, [Huánuco], Peru, 800 m., W.F.H. Rosenberg, in Cornell University collection. Paratypes: 11 males from type locality in British Museum of Natural History, 2 males in American Museum of Natural History, 2 males in Cornell University collection.

Discussion.—This species is difficult to distinguish from pallidior, and if they did not occur together I would be inclined to consider them as races of one species. The color of the hindwing is the best superficial character to distinguish them, but it is not completely infallible.

Specimens examined.—36 males, June, October, and November.

PERU. Amazonas: Huambo; Chachapoyas; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo; Pasco: Huancabamba; Puno: La Oroya, R. Inambari, 3100 ft.; Santo Domingo, 6000 ft.; not located: El Forvenir, 900 m.; Quiroz; Rentema Falls, Upper Maranon, 1000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Caraplaya, 1300 m., 65° W, 13° S.

Pero suffusa Poole, NEW SPECIES

Male (fig. 180).—Forewing superficially similar to that of pallidior, but with suffused, slightly misty-gray appearance and without any contrasting markings. Below lighter than in pallidior or naranja.

Male genitalia (figs. 597, 597a).—Similar to genitalia of naranja and pallidior but with ventral processes of valves shorter. Juxta is wider than in either of two preceding species, and tip of aedeagus has one flap more rounded than in either pallidior or naranja.

Female.—Unknown.

Variation.—Although most of the specimens have the characteristic suffused appearance, some of them approach pallidior rather closely.

Types.—Holotype: Male, Environs de Loja, Ecuador, 1893, in U.S. National Museum. Paratypes: From type locality, 1 male in American Museum of Natural History, 1 male in British Museum of Natural History, 5 males in U.S. National Museum.

Discussion.—The suffused appearance of this species will usually identify it. Although similar to pallidior, it occurs with that species in southern Ecuador.

Specimens examined.—10 males.

ECUADOR. Loja: El Monje, pres Loja; Environs de Loja.

Pero clana Poole, NEW SPECIES

Male (figs. 181-183).—Described from Venezuelan specimen. Thorax dull olive gray, with crest as in pallidior. Forewing basal area mostly olive; patch on inner one-third of inner margin lighter than remainder of basal area and also browner; darker olive scaling between patch and antemedial line; median area purple brown with fine striations as in pallidior; subterminal area with light band along

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postmedial line poorly developed as compared with pallidior, light line in middle of subterminal area always distinct from it. Hindwing as in pallidior, but darker, more orange, and much more heavily flecked with dark scales; postmedial line less distinct. Below orange, not reddish; inner margin of hindwing heavily flecked with dark scales. Abdomen olive brown, orange ventrally.

Male genitalia (figs. 598, 598a, 599, 599a).--Two short prongs of ventral processes of valves and tomentose arm of vesica are characteristic of this species.

Female (fig. 184).--Smaller and browner than pallidior. Forewing boundary between light and dark areas of subterminal area more clear cut, hindwing browner, more heavily flecked with dark scales, and below darker than in pallidior; postmedial line of hindwing whiter and more distinct.

Female genitalia (fig. 994).

Variation.--If this is just one species, it is variable. The specimens described are from Rancho Grande, Venezuela. Within this population there is a moderate amount of variation, particularly in the darkness or lightness of the coloration. Some specimens have the markings clearer than others, and often the amount of dark scaling varies. The Mérida, Venezuela, specimens are faded, but they are slightly lighter than those from Rancho Grande. The Brazilian specimens are lighter and more clearly marked than the Venezuelan ones.

There are two particularly aberrant populations, one from southern Colombia and the other from Ecuador and Peru. The Colombian specimen is much like the Venezuelan specimens, but is suffused and orange below. The Ecuadorian population is unusual, and in most ways it is almost superficially identical to specimens of pallidior, but the markings are very crisp appearing.

There is also variation in the male genitalia. The shape of the costal fold of the valve is variable as is the arm of the vesica, which in the Brazilian and Venezuelan specimens is well developed and tomentose, but in the Andean populations (including the Mérida specimen) it is only slightly or not at all tomentose.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], Aragua, Venezuela, R.W. Poole, June 7, 1967, in U.S. National Museum. Allotype: Female from type locality also in U.S. National Museum. Paratypes: From type locality 1 male and 1 female each in American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; 5 males and 2 females in Universidad Central de Venezuela collection; 16 males and 8 females in U.S. National Museum.

Discussion.--There may be two or three species involved. The specimens from Peru, Ecuador, and Colombia are particularly suspect. There seems to be a continuous variation in the specimens up through the Andes, into the northern mountains of Venezuela, and down to southern Brazil in the shape of the costal fold and the degree of tomentoseness of the vesica arm. The Venezuelan specimens from Rancho Grande have a tomentose vesica arm as do the Brazilian specimens, but the costal fold of the valve is shaped as in the Andean specimens. Until more material is available, particularly from the Peruvian populations, it is probably best to treat this assemblage as one species.

Where this species and decora occur together in southern Brazil, the females may be separated superficially by the contrast between dark and light areas of the subterminal area of the forewing above. In decora the subterminal area is almost uniformly orange. The females are almost always impossible to distinguish superficially, but males can be easily identified by brushing away the scales from the end of the abdomen and looking for the long processes of the valves in decora.

Specimens examined.--101 males and 51 females, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida. BRAZIL. Paraná: Castro; Ponta Grossa; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Petropolis; Rio Grande do Sul: Elsenuas; Farroupilha; Guarani; Porto Alegre; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Nova Bremen, 250 m.; Nova Teutonia; Rio Leiss, Blumenau; Rio Vermelho, 830 m.; Iguassu, Parana; "St. Catherines"; São Paulo: Alto da Serra, Santos; Salto Grande, Paranapanema; Santos; Sao Paulo; Serra do Cubotas. PARAGUAY. Not located: Puerto Beloni. ARGENTINA. Misiones: Iguazu. PERU. Puno: La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft. ECUADOR. Loja: Loja; no specific locality: Ecuador. COLOMBIA. Cundinamarca: Finca San Pablo, 8 km. N. Alban, 1800 m.; Pacho, 2200 m.; Valle del Cauca: Rio Dagua.

Pero speciosata (Guenée), NEW COMBINATION

Axelina speciosata Guenée, 1857:159.

Male (fig. 185).--Very much like pallidior, but more orange with maculation not as bright and clear. Forewing patch in basal area uniform light olive, not lighter toward outside; subterminal area with light patch along postmedial line poorly developed, not fusing with light line in middle. Hindwing more orange than in pallidior; postmedial line less well developed, particularly white part. Below orange, not reddish; postmedial line of hindwing broader and not as clear as in pallidior. Abdomen dark orange.

Male genitalia (figs. 600, 600a).--Shape of ventral process of valve is characteristic.

Female (fig. 186).--Similar to female of pallidior. Forewing coloration slightly lighter; gray patch at inner margin on postmedial line not extending upward as gray band along outer side of postmedial line. Hindwing postmedial line less clear cut than in pallidior and heavily scaled with brown toward base.

Female genitalia (fig. 995).

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Variation.--A few specimens are slightly darker than others, but speciosata is otherwise not a variable species.

Type.--Guenée described this species from "Colombie, un male, coll. Marchand." This specimen is probably lost, but the description is explicit enough to tie the name to this species.

Discussion.--This species is usually easy to recognize because of the dark orange hindwing.

Specimens examined.--42 males and 1 female, all year.

COLOMBIA. Antioquia: Frontina; Mesopotamia, 5000 ft.; Tolima: Canon del Tolima, 1700 m. ECUADOR. Azuay: Santa Isabel, 65 km. S.W. Cuenca, 600 m.; Imbabura: Lita, 3000 ft.; Loja: Environs de Loja; Loja to km. 30 Zamora, Santiago-Zamora prov., 1600 m.; Loja; Tungurahua: Hacienda Machay, Valle de Pastaza; no specific locality: Ecuador. PERU. Amazonas: Chachapoyas; Huambo; Huánuco: Pozuzo; Junin: Chanchamayo; Pasco: Oxapampa, 6500 ft.; Huancabamba, 6-10,000 ft.; not located: Charape, River Tabaconas, 4000 ft.; Cahupe, 6100 ft.; El Porvenir, 900 m.; Tambillo; no specific locality: Peru.

Pero costa Poole, NEW SPECIES

Male (fig. 187).--Much like clana, but slightly larger and appearing orange, not olive. Forewing light patch in basal area wider than in clana; subterminal area with light areas less well developed. Hindwing orange, not olive; inner margin heavily infuscated with dark scales. Below slightly red, redder than clana.

Male genitalia (figs. 601, 601a).--Easily recognized by shape of ventral process of valve.

Female (fig. 188).--Similar to female of clana, but hindwing orange, without slight brownish appearance of clana; generally lighter.

Female genitalia (fig. 996).

Types.--Holotype: Male, Mount Poas, [Heredia], Costa Rica, Schaus and Barnes, May, in U.S. National Museum. Allotype: Female, Puntarenas, Monteverde, Costa Rica, in American Museum of Natural History. Paratypes: 2 males from allotype locality in American Museum of Natural History; 2 males from Orosi, Cartago, Costa Rica, in British Museum of Natural History.

Discussion.--This species and the next are closely related. The shape of the ventral process of the valve, the costal fold, and the aedeagus are all similar.

Specimens examined.--6 males and 2 females, all year.

COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Heredia: Mount Poas; Puntarenas: Monteverde, 4500 ft.; no specific locality: Costa Rica.

Pero cruza Poole, NEW SPECIES

Male (fig. 189).--Almost identical with costa. Forewing lighter than in costa, particularly subterminal area; light band along postmedial line and light line in center of subterminal area not distinct. Below lighter orange than costa, without slight red of that species.

Male genitalia (figs. 602, 602a).--Easily distinguished from costa by shape of ventral process of valve.

Female.--Unknown.

Type.--Holotype: Male, Orizaba, [Veracruz], Mexico, Sept. 48, in American Museum of Natural History.

Discussion.--Pero cruza is closely related to the preceding species. It may only be a race, but it is easily identified by the shape of the ventral process of the valve.

Specimen examined.--1 male, September.

MEXICO. Veracruz: Orizaba.

Pero decora (Butler), NEW COMBINATION

Azelina decora Butler, 1881:44.

Male (fig. 190).-- Almost impossible to separate from clana superficially. Hindwing postmedial line more incurved than in clana; darker orange. Below hindwing with basal half lighter than subterminal part of wing (in clana coloration is almost uniform).

Male genitalia (figs. 603, 603a).--Easily identified by shape of ventral process of valve.

Female (fig. 191).--Much like female of clana, but forewing darker; dark and light areas of subterminal area not as clear cut and hindwing more heavily infuscated than in clana.

Female genitalia (fig. 997).

Variation.--There appears to be a moderate amount of variation in the coloration of the hindwing, both in the color and the intensity of the dark scaling.

Type.--Described from a single female from "Rio Janeiro" in the British Museum of Natural History.

Discussion.--Although the male genitalia are distinctive, the tomentose arm of the vesica seems to link decora with clana. Superficially decora also seems to be closest to this species. Although the two species are difficult to distinguish superficially, the males can usually be identified by brushing the scales from the end of the abdomen and looking for the long ventral process of the valve characteristic of decora.

In the females the presence of light and dark areas in the subterminal area of the forewing indicates clana; the subterminal area of decora is more uniform appearing.

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Specimens examined.—15 males and 11 females, July, February, and April.

BRAZIL. Paraná: Castro; Rio de Janeiro: Rio Janeiro; Santa Catarina: Nuevo Teutonia; São Paulo: Santos; Sao Paulo.

Pero delauta (Warren), NEW COMBINATION

Pergama delauta Warren, 1907:318.

Male (fig. 192).—Palpi and legs light straw yellow. Forewing maculation as in other members of this complex, but light straw yellow, marked with dark brown; basal area dull yellow, light yellow patch on inner margin and olive band before lower half of antemedial line; median area heavily scaled with brown; postmedial line dark, waved, and followed by olive-brown band; subterminal area light yellow to straw yellow, lightest along postmedial line, and with light wavy band in middle. Hindwing light straw yellow; postmedial line strongly incurved, diffuse, brown. Below light yellow, only slightly scaled with dark flecks, brighter than above; apex of forewing slightly orange.

Male genitalia (figs. 604, 604a).—Shapes of costal fold and ventral process of valve are distinctive.

Female (fig. 193).—Similar to male, but darker and more heavily scaled with dark brown. Below hindwing with postmedial line marked with strong brown band.

Female genitalia (fig. 998).

Type.—Described from a single male from La Union, Caura River, Venezuela, in the British Museum of Natural History.

Discussion.—Pero delauta is most common in lowland areas; it is very common on Barro Colorado Island in the Canal Zone of Panama. The light straw yellow and the deep incurving of the postmedial line of the hindwing are characteristic.

Specimens examined.—95 males and 22 females, all year.

MEXICO. Chiapas: La Granja; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; Veracruz: Jalapa; "Vera Cruz." GUATEMALA. Izabal: Cayuga; Sololá: Volcan de Atitlan, 25-3500 ft.; not located: San Geronimo. NICARAGUA. Las Jinotepes. HONDURAS. S. Pedro Sula. COSTA RICA. Cartago: Cachi; San Jose; Tuis; Limón: Guapiles, 984 ft.; Puntarenas: Monteverde, 4600 ft.; not located: La Florida, 500 ft. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui; not located: Lino, 500 m. VENEZUELA. Bolívar: La Union, Caura River. COLOMBIA. Boyacá: Muzo, 800 m.; no specific locality: Colombia. ECUADOR. Napo-Pastaza: Sarayacu. PERU. Junin: Satipo; Pasco: Oxapampa, 2000 m.; La Union, R. Huacamayo, 2000 ft. BOLIVIA. Santa Cruz: Santiage del Estero.

GROUP 6

Group 6 is characterized by the structure of the valve of the male genitalia (fig. 606). The costal fold of the valve is usually followed by a wide expanse of membrane and the subscaphium is often highly modified. The vesica of the aedeagus usually has a large cornutus. The bursa of the female genitalia is often minutely spinose, although not in one or two species. The last abdominal sternite in the male is usually highly developed and modified into a "box-like" structure with two strengthened areas and apodemes for muscle attachments.

This group is almost entirely Central and North American, although a few species are found in South America. The North American group of species that has gone under the name of Pero is included in this group.

Pero melissa (Druce), NEW COMBINATION

Azelina melissa Druce, 1892:63, pl. 47, fig. 12.
Azelina subochreata Warren, 1900:210. NEW SYNONYMY.
Azelina subochreata ab. nocturna Warren, 1900:210.

Male (fig. 194).—Legs concolorous with forewing, sprinkled with dark scales; spurs of legs with black band at about middle. Forewing polymorphic, varying from rusty orange to dark brown with slight purplish tint; discal dot thin and white; outer one-fifth of median area darker than inner four-fifths; series of vague black dots along outer margin. Hindwing postmedial line vague and slightly set off in white; anal angle with black shade running along postmedial line, and one or two vague black dots along edge. Below most markings vague; median area with diffuse black band running length of median area of forewing to costa; postmedial line of hindwing white.

Male genitalia (figs. 605, 605a).—Shape of costal fold is characteristic.

Male eighth sternite (fig. 631).

Female (fig. 195).—Slightly larger than male; maculation more distinct. Forewing usually violet brown, in a few individuals darker or lighter; discal dot larger; antemedial and postmedial lines edged with white; veins in subterminal area marked with black.

Female genitalia (fig. 999).

Variation.—Although maculation and size seem to be constant from individual to individual and from place to place, there is a great amount of polymorphism in color, the ground color varying from rusty orange to dark purple brown. The color variation is, in general, a continuous character, but there are three basic forms—rusty orange, dark purple brown, and red brown. In the males, rusty orange and dark brown are the two common forms and the red-brown form is moderately rare, but in the females, the red-brown form is common, the orange form is absent, and the dark brown form is rare. The frequencies of the three forms in the males are variable from place to place; a large series from San Cristobal, Alta Verapaz, Guatemala, has

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significantly more dark brown males than a series from Jalapa, Veracruz, Mexico. The calculated percentage of light brown to dark brown at Jalapa was 0.5454 (24 out of 44) and at San Cristobal 0.2987 (23 out of 77). There are not enough large samples from other places to make further generalizations, but it is clear from the material that I have seen that there are no clear-cut geographical trends. The Colombian specimens are more suffused than those from Central America.

Types.--Druce described melissa from a single male from Jalapa, Mexico, now in the U.S. National Museum. Azelina subochreata was described from two males from "Popayan, Colombia." The male bearing Warren's type label is designated as the lectotype and is in the British Museum of Natural History. The aberration nocturna was based on the "second male from Popayan, Colombia."

Discussion.--This is one of the more common species of Pero in Central America, particularly northern Central America, and it is probably related to the stock from which the North American species of the group are descended. Pero melissa appears to occur at altitudes of about 3,000-6,000 feet.

Specimens examined.--227 males and 51 females, all year.

MEXICO. Chiapas: Lagos del Montebelo, 25 mi. E. El Trinitaria; Federal District: Mexico; S. Angel; Mexico: Ruins of Teotichuacan; Zaculpan; Nuevo León: 3 mi. E. Galeana, 5000 ft.; Oaxaca: Cerro Pelon, Municipio Yolox, 7052 ft.; Vista Hermosa, Municipio Comaltepec, 4650 ft.; Veracruz: Cordoba; Jalapa; Orizaba; "Vera cruz." GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, above 1350 m.; Baja Verapaz: Purulha; Chichicastenango: Quiche, St. Thomas, 7060 ft.; Chimaltenango: Municipio Acatenango, Quisache, 750 m.; Quesaltenango: Volcan St. Maria; Sololá: Chechexik, Municipio Santa Lucia, Utatlban, above 2250 m. HONDURAS. Rosario, San Juancito Mtns., 5150 ft. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; San Jose, 4000 ft.; Heredia: Mount Poas; Puntarenas: Monteverde, 4600 ft.; not located: Candaleria Mts. PANAMA. Chiriqui: Chiriqui; not located: Lino, 800 m. COLOMBIA. Cauca: Popayan.

Pero rica Poole, NEW SPECIES

Male (fig. 196).--Antennae bases white. Legs brown, flecked with white; spurs white with black band in middle. Forewing basal area light brown, but heavily shaded with brown; median area dark brown, outer one-third slightly darker than inner two-thirds; discal dot large, white, with central black dot; subterminal area light brown, lightest next to postmedial line; two white dots along outer margin. Hindwing postmedial line vague and with light shade along it at anal angle. Below bottom half of forewing almost completely dull white; top half dark red brown; hindwing dark, red brown, heavily flecked with white, and with very large white discal dot.

Male genitalia (figs. 606, 606a).--Characterized by shape of subscaphium.

Male eighth tergite and sternite (figs. 632, 633).

Female (fig. 197).--Forewing brown, heavily flecked with black scales; median area not contrasting with either basal or subterminal areas as in male; discal dot large, inner edge black; antemedial and postmedial lines marked with black; outer margin with three white dots and black one. Hindwing outer margin with six well-marked black dots; postmedial line prominent and well marked with white. Below similar to male, but with outer margin of hindwing heavily marked with white.

Female genitalia (fig. 1000).

Types.--Holotype: Male, Pinar Bonito, 2 mi. S. Constanza, Republica Dominicana, April 2, 1953, J.A. Ramos, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum.

Discussion.--This species is related to bicolor, but the genitalia of the male and female are distinctive.

Specimens examined.--1 male and 1 female, April.

DOMINICAN REPUBLIC. Pinar Bonito, 2 mi. S. Constanza.

Pero bicolor (Warren), NEW COMBINATION

Azelina bicolor Warren, 1895:137.

Male (fig. 198).--Forewing light brown to dark brown, but also with various shades of violet brown; maculation as in rica, but discal dot not as well developed. Below forewing not white on inner margin; hindwing not nearly as heavily marked with white as in rica; discal dot of hindwing black. Larger than rica.

Male genitalia (figs. 607, 607a).--Characterized by subscaphium, which looks like a little doll with two stubby arms, and costa fold.

Male eighth tergite and sternite (figs. 634, 635).

Female (fig. 199).--Similar to male, but slightly larger. Forewing postmedial line marked with white; angle of postmedial line at M_3 marked with light brown patch that fades into ground color of subterminal area. Below similar to male. Abdomen end tipped with white scales.

Female genitalia (fig. 1001).

Variation.--The color of this species varies, with brown the average and the color variation being either toward lighter or darker, and with or without a purplish tint.

Type.--Described from a long series from "Jamaica." The male in the British Museum of Natural History with Warren's type label is designated as the lectotype.

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Discussion.--Pero bicolor is limited to Jamaica and probably occurs mostly in the mountains.

Specimens examined.--14 males and 7 females, May-November.

JAMAICA. Chinchona; Hardware Gap, 4800 ft.; 1 mi. N. Hardware Gap; Newcastle; Portland Parish, Hardware Gap, Green Hills; Jamaica.

Pero vecina (Schaus), NEW COMBINATION

Azelina vecina Schaus, 1901:180.

Male (fig. 200).--Antenna base white. Legs dark brown with very little white flecking. Forewing dark brown, becoming slightly lighter when faded; median area usually little darker than basal and subterminal areas; outer third of median area darker than inner two-thirds; antemedial and postmedial lines shaded with black; discal dot white, usually distinct. Hindwing concolorous with forewing; postmedial line distinct, shaded with white; four black dots at outer edge near anal angle. Below light brown, heavily flecked with white; maculation, except black discal dot on hindwing, indistinct.

Male genitalia (figs. 608, 608a).--Characterized by oddly shaped subscaphium. Tip of aedeagus slightly pleated.

Male eighth tergite and sternite (figs. 636, 637).

Female (fig. 201).--Tends to be slightly larger and darker than male. Next to last abdominal segment covered with white scales above.

Female genitalia (fig. 1002).

Variation.--There is only a small amount of variation in the shade of brown of the wings and the black flecking of the forewing of the male.

Type.--Described from a single male from Jalapa, [Veracruz], Mexico, in U.S. National Museum.

Discussion.--This species appears to fly in the same places and at the same times as melissa, although it is not as common. The bulbous tip of the aedeagus signifies a relationship with bicolor and rica, but it is superficially distinct from them.

Specimens examined.--61 males and 25 females, all year.

MEXICO. Hidalgo: Jacala; Morelos: Cuernavaca; Nuevo León: 3 mi. E. Galeana, 5000 ft.; Veracruz: Jalapa; Orizaba. GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, above 1350 m.; Chimaltenango: Municipio Acatenango, Quisache, 750 m. COSTA RICA. Cartago: Cartago; Azlan de Cartago, 5-6000 ft.; Juan Vinas; La Uruca, pres San Jose, 1100 m.; Orosi, 1200 m.; San Jose, 5000 ft.; Puntarenas: Monteverde, 4600 ft.; not located: Candaleria Mtns.; no specific locality: Costa Rica. PANAMA. Chiriqui: Chiriqui; Volcan de Chiriqui, 5-9000 ft. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Federal District: Caracas; Lara: El Cuji, 7 km. N. Barquisimeto; Terepaima, 10 km. S. Barquisimeto; Yaracuy: Aroa. GUYANA. Tumatumari, Rio Potaro. COLOMBIA. No specific locality: Colombia.

Pero curuma (Schaus), NEW COMBINATION

Azelina curuma Schaus, 1901:182.

Male (fig. 202).--Legs with tibiae tipped with white. Forewing violet brown; basal area lighter than median area and with obscure darker striations; top of projection of antemedial line into discal cell with black streak; apex of wing brownish with bottom three-fourths of subterminal area composed of two triangles, brown one along postmedial line pointing upward, and gray-black one along outer margin pointing downward. Hindwing black brown; yellow-brown patch in anal angle after postmedial line; three black dots along outer margin. Below dark violet brown; inner margin of forewing lighter; hindwing with white flecking and with conspicuous cream-white patch near anal angle following postmedial line; postmedial line not contrasting.

Male genitalia (figs. 609, 609a).--Characterized by shape of subscaphium.

Male eighth tergite and sternite (figs. 638, 639).

Female (fig. 203).--Forewing light brown; maculation as in male, but without two triangles in subterminal area; two paler transverse stripes and darker shade following postmedial line in subterminal area. Hindwing light brown. Below discal dot of hindwing cream colored.

Female genitalia (fig. 1003).--Can be distinguished from genitalia of idola by two inpocketings of neck of ovipositor and by shape of ostium.

Variation.--Based on the small number of specimens available, curuma does not appear to be a variable species, although some variation is in the darkness of the ground color of the males and females, particularly in the latter. There is also considerable variation in the size of the females, although they are almost always larger than the males.

Type.--Described from a single male from Jalapa, [Veracruz], Mexico, in U.S. National Museum.

Discussion.--Although this species and the next are closely related and superficially difficult to separate, curuma seems to be restricted to southern Mexico and idola to Costa Rica and northern Panama. Pero curuma is not as distinctly violet gray as the next species.

Specimens examined.--3 males and 8 females, September and October.

MEXICO. Guerrero: Guerrero; Oaxaca: Vista Hermosa, Municipio Comaltepec, 4650 ft.; Veracruz: Jalapa.

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Pero idola Poole, NEW SPECIES

Male (fig. 204).—Forewing similar to that of curuma but slightly more violet gray; postmedial line jutting out on M_2 and 2A more than in curuma. Below even violet gray, without whitish scaling of curuma, except along inner margin of hindwing; apex of forewing with orange-brown patch; fringe of hindwing also orange brown.

Male genitalia (figs. 610, 610a).—Subscaphium is characteristic and gives species its name. Male genitalia are larger than in curuma.

Male eighth sternite and tergite (figs. 640, 641).

Female (fig. 205).—Dark brown, not light brown as in curuma. Below postmedial line brown, not white; discal dot of hindwing black, not white.

Female genitalia (fig. 1004).—This species lacks outpocketings of ovipositor neck found in curuma. Shape of ostium is also different.

Variation.—In the series from Orosi, Cartago, Costa Rica, there seems to be little if any variation.

Types.—Holotype: Male, Orosi, 1200 meters, [Cartago], Costa Rica, Fassl, in British Museum of Natural History. Allotype: Female from type locality in British Museum of Natural History. Paratypes: 3 males and 3 females from type locality in British Museum of Natural History.

Discussion.—This species can best be distinguished from curuma by its geographical range or by the distinctive male genitalia.

Specimens examined.—5 males and 5 females, June.

COSTA RICA. Cartago: Orosi, 1200 m.; Vol. Turrialba. PANAMA. Chiriqui: Chiriqui.

Pero lessema (Schaus), NEW COMBINATION

Atelina lessema Schaus, 1901:181.

Male (fig. 206).—Legs with apices of tibiae and tarsi of metathoracic legs cream white. Forewing polymorphic in color, particularly median area; basal area usually light brown, but sometimes with fuscous shading; median area varying from black to brown to red brown; antemedial line followed by blackish shade; subterminal area variously marked with lighter or darker shades, usually one following postmedial line at cubital veins and another longer one transversing subterminal area from anal angle, running toward origin of postmedial line on costa; apex often darker than remainder of subterminal area. Hindwing postmedial line not distinct; obscure cream-colored patch in anal angle after postmedial line. Below with red-brown patch proximal to apex of forewing; hindwing with crenulate postmedial line followed by cream-colored shade; discal dot black; wing heavily flecked with black and white.

Male genitalia (figs. 611, 611a).—Easily characterized by shapes of subscaphium and costal fold.

Male eighth sternite (fig. 642).

Female (fig. 207).—Similar to male, but lighter; median area of forewing varying from brown to red brown; postmedial line of hindwing usually better defined. Below light brown, without red-brown patch of male; postmedial line of hindwing crenulate, followed by white shade more conspicuous than in male.

Female genitalia (fig. 1005).

Variation.—The Mexican populations are smaller than those from Guatemala and Costa Rica, although the samples are not large enough for statistical analysis. A female from Monterrey, Mexico, is particularly small compared with the three females from Puntarenas, Costa Rica. The most distinctive variation is in coloration. In the males, the median area varies from black to brown and a few specimens are red brown. The intensity of the maculation in the subterminal area varies from almost absent to alternating dark and light shades. In the population from Santa Maria, Guatemala, there are two principal forms, one with a black and another with a red-brown median area. One of the females from Puntarenas, Costa Rica, is larger than the other females and has the basal and subterminal areas gray, marked with black scales, and a red-brown median area. In the other females the median area varies from dark brown to red brown, and the basal and subterminal areas are not flecked with gray scales.

Type.—Described from a single female from Jalapa, Mexico, in U.S. National Museum.

Discussion.—The variation in the color of the median area of this species is remarkable. There are relatively few intergrades between the black and red-brown forms in the males. The dark brown of the females may correspond to the black of the male. Most specimens are from mountainous areas.

Specimens examined.—? males and 32 females, all year.

MEXICO. Mexico: Zacualpan; Nuevo León: 2 mi. S. Monterrey, 4200 ft. Chipinque Mesa; Oaxaca: Vista Hermosa, Comaltepec, 4650 ft.; Sinaloa: El Palmito; Veracruz: Cordoba; Jalapa; Orizaba. GUATEMALA. Chimaltenango: Municipio Acatenango, Quisache, 750 m.; Quezaltenango: Volcan St. Maria. HONDURAS. Rosario Mine, San Juancito, 5000 ft. COSTA RICA. Heredia: Mount Poas; Puntarenas: Monteverde, 4600 ft.

Pero iraza Poole, NEW SPECIES

Male (fig. 208).—Palpi black brown. Legs black brown, tibiae tipped with white. Forewing black brown to black; basal area dull brown, but heavily infuscated with black brown; antemedial line strong only toward costa; median area black brown, but outer one-fifth darker than inner four-fifths; discal dot large, white, with black point in center;

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subterminal area dull brown, mottled with areas of black-brown flecking. Hindwing dark gray brown, postmedial line white, slightly wider in anal angle, but forming only wide line, not patch; strong series of black dots along outer margin. Below brown; rusty-orange patch around postmedial line toward costa of forewing; discal dot of forewing cream white with black spot in center; postmedial line of hindwing fine, brown, dentate, accented with cream white; hindwing flecked with cream-colored scales, not concentrated on inner margin; discal dot of hindwing a black spot in white area.

Male genitalia (figs. 612, 612a).--Shapes of costal fold and subscaphium are characteristic.

Male eighth sternite (fig. 650).

Female.--Unknown.

Type.--Holotype: Male, Irazu, 6-7000 ft., [Cartago], Costa Rica, H. Rogers, in British Museum of Natural History.

Specimens examined.--4 males.

COSTA RICA. Cartago: Irazu, 6-7000 ft.

Pero saturata (Walker)

Axelina saturata Walker, 1868:196.
Axelina emmaria Oberthür, 1883:22.

Male (fig. 209).--Legs dark brown; metathoracic legs with tips of femora and tibiae cream colored; tibial spurs of metathoracic legs banded with white and brown; prothoracic and mesothoracic tibiae often tipped with white. Forewing dark brown, but fading to lighter, chocolate brown; angulation of antemedial line into discal cell topped with black; dark median line present; discal dot large and white with black center; postmedial line angulated into median area on 2A, Cu_2, and Cu_1; postmedial line at these points followed by bluish shade; three or four white spots at apex. Hindwing with four black dots in anal angle. Below cream-white spot in bottom half of subterminal area of forewing; postmedial line of hindwing white.

Male genitalia (figs. 613, 613a).--Characterized by shapes of costal fold and subscaphium.

Male eighth sternite and tergite (figs. 643, 644).

Female.--Similar to male.

Female genitalia (fig. 1006).

Variation.--Little if any.

Types.--The type of saturata is a female from "Bogota" and that of emmaria is a male from Huambo, Amazonas, Peru. Both are in British Museum of Natural History.

Discussion.--This is one of the most common species of Pero in tropical America. Possibly saturata is a generally adapted species occurring in disturbed locations. The characteristic sexual dimorphism of the species complex is absent in saturata as it is in the next complex of four species.

Specimens examined.--328 males and 68 females, all year.

MEXICO. Chiapas: La Florida; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft.; Puerto Elegio, Municipio Comaltepec, 3200 ft.; Sinaloa: Presidio; Veracruz: Cordova; Jalapa, 4680 ft.; Jalapa; Misantla; Orizaba; "Vera Cruz." GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, above 1350 m.; Baja Verapaz: Chejel; Chimaltenango: Municipio Acatenango, Quisache, 750 m.; Guatemala: Guatemala City; Izabal: Cayuga; Quezaltenango: Volcan St. Maria. HONDURAS. Rosario Mine, San Juancito. COSTA RICA. Cartago: Cashi [Cachi?], 3300 ft.; Irazu, 6-7000 ft.; Juan Vinas; La Puente, Turrialba; Orosi, 1200 m.; San Jose, 4000 ft.; San Jose; Puntarenas: Monteverde, 4600 ft.; not located: Candaleria Mts. PANAMA. Chiriqui: Chiriqui. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Federal District: Caracas. GUYANA. Maroni. BRAZIL. Paraná: Ponta Grossa; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Friburgo; Organ Mts., Tijuca; Petropolis; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Hansa Humboldt; Jaragua do Sul; Neu Bremen, 250 m.; Neu Bremen, Rio Laeiss; Neu Bremen, Blumenau; Neu Bremen; Rio Laeiss, Blumenau; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Alto da Serra, Santos, 800 m.; Serra do Cubotas; Serra do Mar. BOLIVIA. Cochabamba: Charaplaya [Charapaya], 1300 m., 65° W, 16° S; Incachaca; Yunga del Espiritu Santo; La Paz: Rio Songo, 750 m.; Yunga de la Paz; no specific locality: Bolivia. PERU. Amazonas: El Porvenir, 900 m.; Huambo; Huánuco: Cushi, 1900 m.; Pozuzo, 800 m.; Junin: Chanchamayo, 2000 m.; Chanchamayo; La Merced, Chanchamayo; Rio Colorado; Pasco: Huancabamba, 5000-6000 ft.; Puno: Santo Domingo, 6000 ft.; Uruhuasi 7000 ft.; not located: Pumayaca. ECUADOR. Bolívar: Balzapamba; Chimborazo: Chimbo, 1000 ft.; Imbabura: Paramba; Loja: Environs de Loja; El Monje pres Loja; Los Rios: Quevedo; Napo-Pastaza: Sarayacu; Pichincha: S. Domingo de los Colorados; Tungurahua: El Topo, Rio Pastaza, 4200 ft.; Zamora: Zamora, 3-4000 ft. COLOMBIA. Antioquia: El Cerro, Frontion, 6000 ft.; Fontion; Boyacá: Muzo, R. Cantinero, 400 m.; Muzo, 400-800 m.; Muzo; Cauca: Juntas; Popayan; Cundinamarca: Bogota; Canache; Finca San Pablo, 3 km. N. Alban, 1800 m.; Santa Fe de Bogota; Tolima: Canon del Tolima, 1700 m.; Paramo del Quindiu, 3800 m.; Valle del Cauca: R. Dagua; not located: Michay; no specific locality: Colombia.

nucleata Species Complex

This complex consists of four species (from electra through aragua). Two are from the Andes and two from Central America and northern Venezuela, although these distributions may be extended when more specimens are collected. A key to males based on superficial appearance follows. It will probably serve for females also.

1. Smaller (25-35 mm); brown; known only from northern Venezuela ..... aragua

   Larger (35-45 mm) 2

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2. When fresh, purple brown; discal dot small; striations of forewing in subterminal area above not well defined; mostly Central American ..... rotundata

Light brown to brown, not purple brown; subterminal area of forewing above with striations defined; discal dot of forewing above large; mostly from Andes 3

3. Light brown; discal dot large ..... nucleata

Brown; discal dot smaller ..... electra

Pero electra Poole, NEW SPECIES

Male (fig. 210).--Legs with tibiae tipped with white. Forewing light brown to brown; median area darker shade of brown than either subterminal area or basal area; postmedial line straight, followed by fine bluish-gray line; subterminal area darker toward outer margin; subterminal area finely striate with brown lines; discal dot large, white, and with black dot in center. Hindwing brown with obscure white postmedial line; patch in anal angle very obscure compared to other members of complex. Below postmedial lines of hindwing and forewing dark brown; forewing with dark shade running from discal dot through postmedial line; dull white blotch in subterminal area of forewing.

Male genitalia (figs. 614, 614a).--Characterized by shape of subscaphium and process below costal fold.

Male eighth sternite (fig. 645).

Female.--Similar to male.

Female genitalia (fig. 1007).

Types.--Holotype: Male, Huancabamba, Cerro de Pasco, 6-10,000 ft., [Pasco], Peru, Boettger, in British Museum of Natural History. Allotype: Female, Chaupe, Peru, in British Museum of Natural History. Paratypes: 2 males from type locality in British Museum of Natural History; 1 male from Huancabamba, N.E. Peru, 6400 ft., in Cornell University collection.

Discussion.--This species is known from Peru, Ecuador, and Colombia, but apparently it is not common.

Specimens examined.--12 males and 3 females, all year.

COLOMBIA. Cundinamarca: Pacho, 2200 m. ECUADOR. Napo-Pastaza: Baeza; Sarayacu; Tungurahua: Hacienda Machay, Valle du Pastaza, Ambato. PERU. Pasco: Huancambaba, Cerro de Pasco, 6-10,000 ft.; Piura: Huancabamba, 5000-6400 ft.; Puno: Santo Domingo, 6000-6500 ft.; not located: Chaupe, 6100 ft.; no specific locality: Peru.

Pero nucleata (Warren), NEW COMBINATION

Eusenea nucleata Warren, 1907:304.

Male (fig. 211).--Forewing light brown; discal dot very large, white, often with black dot in center. Hindwing without light patch in anal angle; postmedial line only faintly indicated. Below very light tan; discal dot of forewing very large with black blotch in center, no black shade between discal dot and postmedial line; postmedial line of hindwing gray blue; discal dot white with black center.

Male genitalia (figs. 615, 615a-b).--Characterized by shapes of subscaphium and process below costal fold.

Male eighth sternite.--As in rotundata.

Female.--Similar to male.

Female genitalia (fig. 1008).

Variation.--The size of the discal dot varies slightly.

Type.--Warren described nucleata from four males from La Oroya, Peru, R. Inambari. The male with Warren's type label in the British Museum of Natural History is designated as the lectotype.

Discussion.--The large white discal dot and the light tan of the forewing will usually distinguish nucleata from any of the other three species in this complex.

Specimens examined.--9 males and 1 female, all year.

PERU. Huánuco: Pozuzo, 800 m.; Puno: Agualani; La Oroya, R. Inambari, 3100 ft.; S. Domingo, 6500 ft. BOLIVIA. Cochabamba: Incachaca.

Pero rotundata (Warren), NEW COMBINATION

Eusenea rotundata Warren, 1900:215.

Male (fig. 212).--Forewing purple brown to brown, darker than in electra; maculation not as distinct as in preceding two species; discal dot small, sometimes indistinct; subterminal area without brown striations as in electra and nucleata. Below all maculation indistinct.

Male genitalia (figs. 616, 616a-b).--Characterized by shapes of subscaphium and process below costal fold.

Male eighth sternite (fig. 646).

Female.--Similar to male, but veins of forewing above accented with brown; discal dot of forewing less distinct than in male. Below an obscure white postmedial line on forewing and hindwing.

Female genitalia (fig. 1009).

Variation.--Specimens from Mexico are slightly larger and darker than those from Costa Rica. The

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series from Rancho Grande, Venezuela, varies in the intensity of the ground color, brown to distinctly purple brown.

Type.--Described from a single male from "Merida, Venezuela," in British Museum of Natural History.

Discussion.--Pero rotundata is primarily a Central American species, but reaches Venezuela in the Northern Cordillera and the northern tip of the Andes.

Specimens examined.--54 males and 9 females, all year.

MEXICO. Guerrero: Coatepec; Oaxaca: Vista Hermosa, Municipio Comaltepec, 4650 ft.; Veracruz: Jalapa; Orizaba; "Vera Cruz." GUATEMALA. Quezaltenango: Volcan St. Maria. COSTA RICA. Cartago: Cashi [Cachi?], 5000 ft.; Cachi; Juan Vinas; La Urca, pres San Jose, 1100 m.; Orosi, 1200 m.; San Jose; Puntarenas: Monteverde, 1400 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida. COLOMBIA. Cauca: Coreato.

Pero aragua Poole, NEW SPECIES

Male (fig. 213).--Forewing similar to that of other three species of this complex but smaller and brown, without purple tint of rotundata; discal dot larger than that of rotundata, but smaller than in nucleata; postmedial line slightly straighter than in rotundata. Below brown, not purple.

Male genitalia (figs. 617, 617a-b).--Shape of subscaphium is characteristic of this species.

Female.--Similar to male.

Female genitalia (fig. 1010).

Variation.--There is some slight variation in the intensity of the brown and the uniform coloration of the forewing.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], Aragua, Venezuela, 1100 m., August 13, 1967, R.W. Poole, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 1 male and 1 female from type locality in each of following museums: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; 4 males and 1 female, Universidad Central de Venezuela; 9 males and 1 female in U.S. National Museum; 1 female from Portochuelo Pass, 7 km. N. Maracay, 1200 m., Aragua, Venezuela, in U.S. National Museum.

Discussion.--This is the smallest species of the nucleata complex.

Specimens examined.--18 males and 8 females, June-September.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Portochuela Pass [7 km. N. Maracay], 1200 m.

Pero contenela Poole, NEW SPECIES

Male (fig. 214).--Palpi dull brown. Legs dull brown, but tips of tibiae white. Forewing basal area yellow brown, heavily infuscated with dark brown, strongest toward inner margin and lower half of antemedial line; antemedial line indistinct toward inner margin, strong brown toward costa; median area dark brown, lighter only between discal dot and antemedial line; discal dot a white bar with black line in it; postmedial line almost straight, although with slight angle on M_3; subterminal area yellow brown, with cover of brown striations in mottled pattern; black dots along outer margin very weak or absent. Hindwing dark, dull gray brown; postmedial line fine, dull white, but not strong; small yellow patch in anal angle. Below tan, yellow-orange patch on top of postmedial line of forewing; patch surrounded on its lower side by black; hindwing tan; postmedial line of hindwing brown, waved, accented with cream color; discal dot a black spot in white area.

Male genitalia (figs. 618, 618a).--Shapes of costal fold and subscaphium easily identify this species.

Male eighth sternite (fig. 651).

Female.--Unknown.

Type.--Holotype: Male, "Guatemala, G. Bruckner," in British Museum of Natural History.

Discussion.--Although the type locality of this species is not precise, I have named the moth because it is so distinctive. The male genitalia indicate that it is related to the species of the preceding complex, and the maculation, if color is disregarded, is also similar.

Specimen examined.--1 male.

GUATEMALA. No specific locality: Guatemala.

honestaria Species Complex

The species of the honestaria complex include honestaria through occidentalis. All are North American. Grossbeck (1910) revised the complex, and since then McDunnough (1949) and Rindge (1955) have reported on it. Rindge's report covered most of the western species and did a great deal to clear up the confusion resulting from the individual and geographic variation found in these species.

The species of the complex are superficially similar, and the male genitalia are the only certain means of identification. I have constructed a key to males with the hope that it will identify a large percentage of specimens without resort to genitalia slides. However, many of the characters I have used are relative, and some specimens will either not key or will key incorrectly.

I have not tried to completely revise this complex because the distribution, variation, and taxonomic legalities have already been treated. In most instances, the reader will be referred to these reports.

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A key to males follows.

1. Catalina Island, CA ..... catalina

   Mainland U.S.A., Canada, and northern Mexico 2

2. Antennae simple 3

   Antennae dentate ..... occidentalis

3. Wing expanse from wing tip to wing tip usually over 45 mm 4

   Wing expanse from wing tip to wing tip usually under 45 mm 5

4. Utah, Arizona, New Mexico, and Colorado ..... gigantea

   British Columbia to middle California and Idaho ..... mizon

5. East of Rocky Mountains 6

   Rocky Mountains, California, and Southwest 9

6. Gray ..... honestaria

   Brown 7

7. Subterminal area of forewing above mottled with light and dark areas as in figure 219 8

   Subterminal area of forewing above not mottled with light and dark areas ... . honestaria

8. Costa of median area of forewing above light brown, lighter than remainder of median area; 2 lobes of 8th sternite of male abdomen strongly developed ..... morrisonaria

   Costa of median area of forewing above not light brown, concolorous with remainder of median area; 2 lobes of 8th sternite of male abdomen not strongly developed ..... hubneraria

9. Subterminal area light gray to dark gray, usually contrasting with median area; maculation of forewing sharp, clear ..... behrensaria

   Forewing not as above 10

10. Wing expanse 40-45 mm from wing tip to wing tip; light gray to gray brown, very soft appearing; southern California to Baja California .... macdunnoughi

    Wing expanse 35-40 mm from wing tip to wing tip; not soft gray or gray brown .. 11

11. Light brown, subterminal area mottled with dark and light brown areas; 2 lobes of 8th sternite of male abdomen strongly developed; northwest U.S. and Canada ..... morrisonaria

    Not light brown, but brown; 2 lobes of 8th sternite of male abdomen not strongly developed; southwest U.S. and northern Mexico ..... modesta

Pero honestaria (Walker)

(Figs. 215, 216, 619, 619a, 652, 1011)

Azelina honestaria Walker, 1860a:258.
Azelina stygiaria Walker, 1866:1548.
Pero dyari Cassino and Swett, 1922a:143.

Larva.--See McGuffin (1963).

Discussion.--For a complete list of the misidentifications that have plagued this species as well as for a further discussion of honestaria, see Grossbeck (1910). The types of honestaria and stygiaria are in the British Museum of Natural History and that of dyari in the Museum of Comparative Zoology, Harvard University.

Pero hubneraria (Guenée), NEW COMBINATION

(Figs. 217, 218, 620, 620a, 653, 1012)

Azelina hubneraria Guenée, 1857:159.
Pero marmoratus; Grossbeck, 1910:375. NEW SYNONYMY.
Pero barnesi Cassino and Swett, 1922a:143. NEW SYNONYMY.

Larva.--Not described, but it has been reared by J.G. Franclemont on Prunus serotina (black cherry) and probably occurs on many shrubs and trees.

Discussion.--There are several misidentifications of hubneraria, and the name was often used for honestaria until 1910, when Grossbeck put it into limbo. While at the British Museum, I had the opportunity to see the original Hübner drawing on which Guenée based hubneraria, and there is no doubt that it is this species. Forbes (1948) treated this as two species, but the variation in the costal fold among specimens within and between the two broods covers his two species. Pero hubneraria has two broods, one in late spring and the other in midsummer.

Grossbeck described marmoratus from several specimens, and the male from "Cambridge" in the U.S. National Museum is designated as the lectotype. Pero barnesi was described from a single male from Salem, Massachusetts, which is in the Museum of Comparative Zoology, Harvard University.

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Pero morrisonaria (H. Edwards)

(Figs. 219, 220, 621, 621a, 654, 1013)

Azelina morrisonaria Henry Edwards, 1881:121.
Pero morrisonatus; Grossbeck, 1910:373.
[Misspelling.]

Larva.--See McGuffin (1963) and Prentice et al. (1963). This species has been reared most commonly from Picea, Abies, and Tsuga, although it has also been collected on several other genera of plants.

Pero gigantea Grossbeck

(Figs. 221, 222, 622, 622a, 655, 1014)

Pero giganteus Grossbeck, 1910:366.
Pero provoensis Cassino and Swett, 1922a:136.

Larva.--The larva of gigantea has not been described, but I have reared it part way to maturity on douglas fir (Pseudotsuga menziesii) in Arizona.

Discussion.--For a fuller discussion, see Rindge (1955).

Pero mizon Rindge

(Figs. 223, 224, 623, 623a, 656, 1015)

Pero mizon Rindge, 1955:7.

Larva.--See McGuffin (1963) (listed under gigantea).

Discussion.--For a fuller treatment, see Rindge (1955).

Pero macdunnoughi Cassino and Swett

(Figs. 225, 226, 624, 624a, 657, 1016)

Pero macdunnoughi Cassino and Swett, 1922a:141.

Larva.--See Comstock (1963). This species probably feeds on many species of shrubs and herbs.

Discussion.--For a fuller treatment, see Rindge (1955).

Pero catalina Poole, NEW SPECIES

Male (fig. 227).--Forewing almost identical with that of macdunnoughi, but almost always light gray and suffused appearing.

Male genitalia (figs. 625, 625a).--Shape of subscaphium is characteristic of catalina.

Male eighth sternite (fig. 658).

Female (fig. 228).--Similar to male, but brown, not light gray.

Female genitalia (fig. 1017).

Variation.--In the small series that I have seen there is some variation in the darkness of the wings.

Types.--Holotype: Male, Avalon, Santa Catalina Island, California, 31-III-1932, Don Meadows, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 3 males and 2 females from type locality in U.S. National Museum.

Discussion.--This species is obviously closely related both geographically and structurally to macdunnoughi, but the shape of the subscaphium of the male genitalia is distinctive.

Pero modesta Grossbeck

(Figs. 229, 230, 626, 626a, 627, 659, 1018)

Pero modestus Grossbeck, 1910:372.
Pero grossbecki Pearsall, 1911:91. NEW SYNONYMY.

Larva.--The larva of modesta has not been described in the literature, but I have reared it in Arizona on willow (Salix sp.).

Discussion.--This is a variable species, although most of the variation is individual rather than geographical. Some specimens are strongly mottled with dark and light bands in the subterminal area of the forewing above, and the maculation in these specimens is usually strong. In other specimens the markings are softer, and the subterminal area is more uniform. The median area of the forewing above varies from dark brown to bronze. The shape of the costal fold in the male genitalia varies slightly from area to area, but I do not believe that any of these differences are of specific value. There are two broods in modesta. The spring brood is usually softer appearing and larger than the summer brood.

A male from Palmerly [sic!], Cochise, Arizona, in the U.S. National Museum with Grossbeck's cotype label is designated as the lectotype of modesta. Pearsall described grossbecki from "a male and a female from Eureka, Utah, with cotypes." The male type is designated as the lectotype and is in the American Museum of Natural History.

Pero behrensaria (Packard)

(Figs. 233, 628, 628a, 660, 1020, 1021)

Azelina behrensaria Packard, 1871:386.
Stenaspilates smithii Grossbeck, 1906:273.
Pero vanduzeeata Wright, 1921:109.
Pero blackmorei Cassino and Swett, 1922a:139.
Pero modocata Cassino and Swett, 1922b:180.
Pero splendorata Cassino and Swett, 1922b:181.

Larva.--See McGuffin (1963) and Prentice (1963).

Discussion.--For a fuller treatment of this variable species, see Rindge (1955).

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Pero occidentalis (Hulst)

(Figs. 231, 232, 629, 629a, 661, 1019)

Marmarea occidentalis Hulst, 1896:380.
Marmarea peplarioides Hulst, 1898:218.
Pero colorado Grossbeck, 1910:374.
Pero packardi Cassino and Swett, 1922a:135.
Pero patriciata Cassino and Swett, 1925:41.

Larva.--McGuffin (1963) and Dyar (1904).

Discussion.--For a fuller discussion, see Rindge (1955).

Pero corata (Schaus), NEW COMBINATION

Azelina corata Schaus, 1901:181.

Male (fig. 234).--Legs with tips of tibiae cream white. Forewing gray brown; basal area light in upper third, bottom two-thirds strongly shaded with dark brown; lower two-thirds of median area dark brown, upper third light brown; discal dot a white line; subterminal area gray brown with black blotch between Cu_1 and Cu_2 after postmedial line; transverse dark brown shade in middle of subterminal area; various other dark shadings in subterminal area. Hindwing dark brown with postmedial line vague except toward anal angle. Below brown with much dull brown scaling. Abdomen end box shaped, square at tip, and slightly lighter than remainder of abdomen.

Male genitalia (figs. 630, 630a).--Easily identified by shapes of subscaphium, uncus, and costal fold.

Male eighth tergite and sternite (figs. 648, 649).

Female (fig. 235).--Similar to male, but brown and without dark brown scaling of male.

Female genitalia (fig. 1022).--Bursa is only vaguely stellate in contrast to that of other species of this group, and bursa and ductus bursae are lined with crenulate ridges as in most other groups of Pero.

Variation.--The males seem not to vary, but in the females the subterminal area of the forewing above varies from brown to a gray. The female from Costa Rica has the subterminal area gray compared with the other females and appears much closer in coloration to the males.

Type.--Schaus described corata from a single female from Jalapa, Mexico, in the U.S. National Museum.

Discussion.--This is the most distinctive species of the group, and one of the more distinctive in the genus. Particularly unusual is the eighth abdominal segment in the male. The last tergite folds down over the end of the abdomen and forms a "box" for the male genitalia. Whether the setae on the last tergite and sternite have any function is unknown.

Specimens examined.--7 males and 7 females, September-December.

MEXICO. Oaxaca: Vista Hermosa, Municipio Comaltepec, 4650 ft.; Veracruz: Jalapa; Orizaba. GUATEMALA. Chimaltenango: Municipio Acatenango, Quisache, 750 m.; Quezaltenango: Volcan St. Maria. COSTA RICA. Puntarenas: Monteverde, 4600 ft.

GROUP 7

Group 7 is easily characterized by the structure of the valve of the male genitalia and the presence of the "pseudofurca," an appendage of the juxta similar in appearance to the furca found in some other groups of the Geometridae. The signum of the bursa of the female genitalia is not present, but a knife-like plate projects into the bursa as shown in figure 1024. The eighth sternite of the male abdomen is often modified, and is sometimes similar to the sternite of the males found in the next group and in group 10. The antennae of the males are either strongly serrate or pectinate and of the females simple.

Most species of group 7 come from southern Brazil, although others are distributed more widely. It is my impression that the species of the group occur most commonly in dry or secondary growth.

Pero charadrea Poole, NEW SPECIES

Male (fig. 236).--Antenna simple or slightly serrate. Palpi dull gray brown. Legs dull gray brown, vaguely spotted with cream-colored scales. Forewing gray brown; basal area brown, heavily flecked with gray toward costa; antemedial line brown; median area uniform gray brown; discal dot a black spot; postmedial line straight, dark brown; subterminal area gray brown, slightly lighter than median area; subterminal area lighter and grayer along postmedial line, and only vaguely mottled. Hindwing dull gray brown; postmedial line vague; no light patch in anal angle. Below light gray brown, lighter than above; discal dot and postmedial line of forewing vague; postmedial line of hindwing usually vague, at most a series of brown spots on veins; discal dot an obscure spot.

Male genitalia (figs. 662, 662a).--Aedeagus is characteristic of this species.

Male eighth sternite (fig. 662b).

Female (fig. 237).--Similar to male, but slightly lighter and more strongly marked below.

Female genitalia (figs. 1023, 1024).

Variation.--Some specimens are grayer than others.

Types.--Holotype: Male, Rio Vermelho, Santa Catarina, 830 m., Brazil, June 1936, A. Maller, in British Museum of Natural History. Allotype: Female, Castro, Paraná, Brazil, 950 m., also in British Museum of Natural History. Paratypes: 3 males from type locality in British Museum of Natural History; 2 females from Castro, Paraná, Brazil, in British Museum of Natural History.

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Discussion.--The male genitalia indicate a close relationship with imperfectaria, but the wings are considerably narrower in this species. Pero charadrea is brown and the veins of the forewing above are not accented.

Specimens examined.--4 males and 3 females, June.

BRAZIL. Paraná: Castro, 950 m.; Santa Catarina: Rio Vermelho, 830 m.

Pero imperfectaria (Guenée), NEW COMBINATION

Azelina imperfectaria Guenée, 1857:161.

Male (fig. 238).--Antennae weakly pectinate. Forewing clay brown, maculation darker brown; veins marked with dark brown in subterminal area; discal dot present. Hindwing clay brown, but suffused with brown gray; postmedial line vague, darker in anal angle; series of small black dots along outer margin; fringe brown. Below both wings clay brown, almost entirely without markings except for vague postmedial line in both wings and light covering of darker brown scales.

Male genitalia (figs. 663, 663a).--Characterized by shapes of juxta and pseudofurca.

Male eighth sternite (fig. 663b).

Female.--Similar to male.

Female genitalia (fig. 1025).

Type.--Guenée named imperfectaria from a male and a female from Brazil. The male was figured by Oberthür (1912) and is designated as the lectotype. This specimen is in the British Museum of Natural History.

Discussion.--The light clay-brown wings and the brown accented veins in the subterminal area of the forewing make this a distinctive species.

Specimens examined.--14 males and 1 female, March and May.

BRAZIL. Minas Gerais: Campo Belo; Rio de Janeiro: Petropolis; Rio de Janeiro; São Paulo: Alto da Serra; Alto da Serra, 800 m.; Santos; Sao Paulo.

Pero simplex (Warren)

Pero? simplex Warren, 1907:320.

Female (fig. 239).--Forewing clay brown; basal area infuscated with dark brown; basal line dark brown, preceded by light band; veins in median area and subterminal area accented; discal dot a small black spot; postmedial line preceded by thin dark brown band; postmedial line followed by light band; subterminal area slightly darker along outer margin. Hindwing clay brown, only postmedial line present, followed by light band; discal dot absent. Below clay brown on light gray base; postmedial lines of forewing and hindwing vague, waved.

Female genitalia (fig. 1026).

Male.--Unknown.

Type.--Warren described simplex from two females from Sapucay, Paraguay. The specimen with Warren's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--The male of this species is unknown. However, simplex is probably closely related to imperfectaria.

Specimens examined.--4 females, January and October.

BRAZIL. Minas Gerais: Uberaba; São Paulo: Sao Paulo. PARAGUAY. Paraguarí: Sapucay.

Pero poaphilaria (Guenée)

Azelina poaphilaria Guenée, 1857:161.
Apicia incrassata (Walker), 1860a:236. NEW SYNONYMY.

Male (fig. 240).--Antennae pectinate. Forewing light clay brown, marked with dark brown; antemedial line followed by dark brown, conspicuous in one form but inconspicuous in another, extending into median area at projections of antemedial line; antemedial line sharply indented on anal vein; discal dot absent or present; postmedial line preceded by dark brown band, more or less developed according to form involved; postmedial line fine, light cream-colored thin, followed by series of small dark brown blotches in some specimens (in specimens with dark brown reduced, veins conspicuous and slightly yellowish). Hindwing light clay brown; vague postmedial line; series of small black dots along outer margin. Below light clay brown; postmedial lines of forewing and hindwing vague; slight amount of dark brown scaling.

Male genitalia (figs. 664, 664a).--Shape of aedeagus is characteristic.

Male eighth sternite (fig. 664b).

Female (fig. 241).--Similar to male, but antennae simple.

Female genitalia (fig. 1027).

Variation.--This species is subject to much variation, particularly the presence or absence of dark brown shades following the antemedial line and preceding the postmedial line of the forewing. In one form the dark brown is conspicuous, the veins tend to be accented, but when the brown is conspicuous, the veins are usually not pronounced. This is not absolute, and in some specimens neither form prevails. The form without the dark brown is the commonest in the female, and the dark brown form is commonest in males. However, both forms are found in male and female specimens.

The Andean populations are on the whole better marked and have a much higher percentage of the dark brown form than the Brazilian populations. The discal dot is also variable and is present in some specimens and absent in others.

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Types.--Guenée based poaphilaria on three males and two females from Brazil. The male in the British Museum of Natural History bearing the label "poaphilaria Gn. Bresil" is designated as the lectotype. The type of incrassata is from "Rio Janeiro" and is a female. This type is in the Hope Museum, Oxford University.

Discussion.--This is a common species in some parts of South America, but absent from Central America. It appears to be most common in southern Brazil.

Specimens examined.--83 males and 75 females, all year.

BRAZIL. Bahia: Preto; Espíritu Santo: Espirito Santo; Minas Gerais: Vicosa; Minas Geraes; Paraná: Castro, 950 m.; Fernandes, Pinheiro, 2600 ft.; Rio de Janeiro: Nova Friburgo; Petropolis; Rio Janeiro; Rio; Teresopolis; Santa Catarina: Blumenau, Rio Laeiss; Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Joinville; Neu Bremen, Rio Laeiss; Nova Bremen, 250 m.; Nova Teutonia; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Alto da Serra; Santos; Sao Paulo; not located: Canto Gallo. BOLIVIA. La Paz: La Paz, 1000 m.; Rio Songo, 750 m. PERU. Amazonas: River Tabaconas, 6000 ft.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Oconeque, 7000 ft.; Oconeque; Quinton, 5000 ft.; Tinguri; not located: Utcuyacu, 5000 ft. ECUADOR. Santiago-Zamora: Loja to km. 30 Zamora, 1600 m. COLOMBIA. Cauca: Popayan; Choco: Valpariso; Cundinamarca: Pacho, 2200 m.; Pueblo Guasca; Vaupés: Ob. Rio Negro; no specific locality: Colombia. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.

Pero mollis (Butler), NEW COMBINATION

Azelina mollis Butler, 1881:34.
Azelina ochracea Butler, 1881:39. NEW SYNONYMY.

Male (fig. 242).--Antennae pectinate. Forewing yellow brown; antemedial line black, appearing double, often preceded by some black markings in scalloping of line; median area usually slightly darker than remainder of wing; discal dot present, but small; postmedial line double, outer line finer than inner, preceded by dark brown line; series of small black blotches often following postmedial line; subterminal area slightly darker toward outer margin. Hindwing postmedial line fine, black; discal dot vague; wing flecked with dark scales toward basal margin; outer margin with series of small black-brown dots. Below yellow brown; postmedial line of forewing double.

Male genitalia (figs. 665, 665a).--Easily identified by shape of aedeagus.

Male eighth sternite (fig. 665b).

Female (fig. 243).--Forewing darker and more orange than male, but maculation same; postmedial line of forewing below not conspicuously double.

Female genitalia (fig. 1028).

Variation.--There is some variation in the intensity of the maculation.

Types.--The type of mollis is a female from "Rio Janeiro" and is in the British Museum of Natural History. Butler described ochracea from two specimens from "Rio Janeiro," but only one was found in the British Museum of Natural History and this male is designated as the lectotype.

Discussion.--Butler's two names were based on the male and female of this species.

Specimens examined.--20 males and 6 females, all year.

BRAZIL. Minas Gerais: Minas Geraes; Paraná: Castro; Rio de Janeiro: Rio Janeiro; Santa Catarina: Rio Laeiss; Rio Vermelho, 830 m.; São Paulo: Alto da Serra, 800 m.; Alto da Serra; Boraceia, Salesopolis, 800 m.

Pero geraesa Poole, NEW SPECIES

Female (fig. 244).--Legs dull brown. Forewing brown to gray brown; basal area gray brown; antemedial line dark gray; median area brown, slightly darker in outer quarter than inner three-quarters; discal dot a black point; postmedial line straight, double, outer line not nearly as dark or as distinct as inner; subterminal area gray brown, outer half slightly darker than inner half. Hindwing dull, light brown; postmedial line present, but indistinct; no patch in anal angle. Below almost uniform gray brown and none of markings distinct; postmedial line of hindwing formed of dots on veins; discal dot of hindwing present, black, but not contrasting.

Female genitalia (fig. 1029).

Male.--Unknown.

Variation.--The paratype female is larger and not nearly as strongly marked as the holotype.

Types.--Holotype: Female, "Minas Geraes," Brazil, 29-I-1921, J.F. Zikan, in British Museum of Natural History. Paratype: 1 female from type locality, also in British Museum of Natural History.

Discussion.--This species is distinctive, and although I have only two females, I have given it a name. It is superficially similar to the dark form of the female of mollis, but the genitalia of the two species are distinct. In mollis the sclerotization of the ductus bursae extends all the way to the bursa but in geraesa only about one-fourth the length of the ductus bursae.

Specimens examined.--2 females.

BRAZIL. Minas Gerais: Minas Geraes.

crocallaria Species Complex

This is a complex of three species easily recognized by the light yellow wings. All three species are from Brazil. A key to males based on superficial appearance follows.

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1. Postmedial line of hindwing above not reaching costa; hindwing light yellow, only slightly if at all flecked with dark scales; conspicuous white band following postmedial line of forewing above ..... calinaria

   Postmedial line of hindwing above reaching costa; hindwing usually dull yellow, heavily flecked or suffused with dark scales; white band following postmedial line of forewing above not as conspicuous or not white 2

2. Forewing and hindwing above heavily flecked with dark scales; band following postmedial line of forewing above not distinctly bordered; basal area of hindwing above usually distinctly lighter than subterminal area ..... crocallaria

   Forewing and hindwing above not heavily flecked with dark scales, although they may be dark; band following postmedial line of forewing above distinctly bordered; basal area of hindwing above only slightly if at all lighter than subterminal area ..... rocanaria

Pero rocanaria Poole, NEW SPECIES

Male (fig. 245).—Antennae serrate, not pectinate. Legs dull yellow, flecked with dark scales. Forewing straw yellow with slightly orange tint; antemedial line dark brown; upper one-fourth of basal area grayish; discal dot circular and conspicuous; postmedial line brown, fine, followed by white area shading into gray brown; outer edge of white band distinct; remainder of subterminal area dull yellow; series of fine black dots along outer margin. Hindwing darker than forewing, particularly subterminal area; discal dot and postmedial line dark brown and conspicuous; series of black dots along outer margin. Below straw yellow; discal dot of forewing followed by dark gray-brown band; discal dot of hindwing conspicuous; postmedial line of hindwing vague, followed by dark band.

Male genitalia (figs. 666, 666a).--Tip of aedeagus is characteristic.

Male eighth sternite (fig. 666b).

Female.—Unknown.

Types.--Holotype: Male, "Santa Cruz," Brazil, in U.S. National Museum. Paratype: 1 male from type locality in American Museum of Natural History.

Discussion.--Pero rocanaria is similar to crocallaria, but the maculation is clearer and the wings are not heavily flecked with dark scales.

Specimens examined.—2 males.

BRAZIL. Not located: Santa Cruz, Bresil Meridionale.

Pero calinaria Poole, NEW SPECIES

Male (fig. 246).--Forewing lighter than in either rocanaria or crocallaria; band following postmedial line pure white, sometimes divided into two parts, one part along postmedial line and other in middle of subterminal area; this band usually more distinct and whiter than in rocanaria and crocallaria. Hindwing lighter than in either of two other species, particularly toward costa; postmedial line not reaching costa; slightly darker in anal angle. Below light, dull yellow; costa of forewing dark; band following postmedial lines of forewing and hindwing well developed and more contrasting than in other two species.

Male genitalia (figs. 667, 667a).--Shape of aedeagus is characteristic.

Male eighth sternite (fig. 667b).

Female (fig. 247).--Forewing veins accented with brown; heavily flecked with dark brown, although not as heavily as in the next species; white band following postmedial line not as distinct as in male, but better developed than in female of crocallaria.

Female genitalia (fig. 1030).

Variation.--Some specimens are darker and more orange than others, and the white band following the postmedial line of the forewing above varies in distinctness.

Types.--Holotype: Male, Castro, Paraná, Brazil, in British Museum of Natural History. Allotype: Female from type locality in British Museum of Natural History. Paratypes: 11 males from type locality in British Museum of Natural History.

Specimens examined.—14 males and 2 females.

BRAZIL. Paraná: Castro, 950 m.; São Paulo: Sao Paulo.

Pero crocallaria (Guenée), NEW COMBINATION

Azelina crocallaria Guenée, 1857:162.

Male (fig. 248).--Forewing almost identical with that of rocanaria, but more heavily flecked with dark brown scales; white band following postmedial line poorly developed, not distinctly bordered outwardly; veins sometimes accented, particularly in subterminal area. Hindwing postmedial line reaching costa.

Male genitalia (figs. 668, 668a).--Only one patch of spines is in vesica and shape of aedeagus is characteristic. Two pseudofurcae are of equal length and width.

Male eighth sternite (fig. 668b).

Female (fig. 249).--Heavily flecked with dark brown; white band following postmedial line of forewing absent or poorly developed; veins clearly marked

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with brown in forewing; angulations of outer margin of forewing more pronounced than in male.

Female genitalia (fig. 1031).

Variation.—The specimens from Castro, Paraná, and Rio de Janeiro are darker than those from Santa Catarina.

Type.—Guenée described crocallaria from two males from "Bresil." The male figured by Oberthür (1912) and so marked is designated as the lectotype and is in the British Museum of Natural History.

Discussion.—Pero crocallaria is the most common of the three species of this complex. It is the most heavily brown flecked species of the three and has the least developed white band following the postmedial line of the forewing. The specimen labeled "Peru" is probably incorrectly labeled, but it is much more orange than any other specimen I have seen.

Specimens examined.—25 males and 8 females, August-October.

BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Itatiaya; Rio Janeiro; Rio; Santa Catarina: Nova Teutonia; Rio Laeiss; Rio Laeiss, 830 m.; São Paulo: Petropolis; Santos. PERU. No specific locality: Peru.

edentaria Species Complex

This is another complex of three species from southern Brazil. It includes edentaria through flora.

A key to males follows.

1. Subterminal area of forewing above strongly blue gray; median area bright yellow brown; lower half of postmedial line of forewing strongly waved; postmedial line of hindwing vague ..... flora

   Subterminal area of forewing above not strongly blue gray although it may have slight blue tint; median area if yellow, dull; lower half of postmedial line of forewing not strongly waved; postmedial line of forewing distinct 2

2. Hindwing strongly marked with dark blotches and specks; subterminal area of forewing above lighter, grayer, often with dark blotches following postmedial line; Minas Gerais to São Paulo ..... edentaria

   Hindwing not strongly marked with dark blotches and with very little dark scaling; subterminal area of forewing above slightly darker, browner, usually more uniform without any dark blotches following postmedial line; São Paulo to Santa Catarina ..... paranaria

Pero edentaria (Guenée), NEW COMBINATION

Odontopera edentaria Guenée, 1857:166.

Male (fig. 250).—Antennae pectinate. Legs light gray brown, slightly speckled with dark scales. Forewing light gray brown; basal area light gray brown, very slightly speckled with dark scales; antemedial line followed by thin brown shade evident or not depending on color of median area; median area brown, varying from light to dark; in light specimens discal cell lighter and slightly yellowish; discal dot large and conspicuous; subterminal area light gray brown, often with strong blue tint; vague blotches often following postmedial line. Hindwing light gray brown, heavily covered with dark gray brown, both in basal area and subterminal area; postmedial line fine, brown, followed by thin light band; series of black dots along outer margin. Below light gray brown; postmedial line of forewing and hindwing waved; forewing brownish along inner margin of postmedial line, particularly toward costa, and gray-brown blotch on middle of postmedial line; hindwing uniform with postmedial line and discal dot contrasting.

Male genitalia (figs. 669, 669a).—This species can be separated from paranaria by shape of juxta and presence of two patches of spines in vesica.

Male eighth sternite (fig. 669b).

Female (fig. 251).—Forewing larger than in male, with maculation weaker; wing heavily flecked with dark scales. Antennae simple.

Female genitalia (fig. 1032).

Variation.—The color of the median area of the forewing above varies from even red brown to red-brown flecking on light gray brown with yellow in the discal cell in others. The number of blotches of various types in the subterminal area also varies considerably.

Type.—Guenée named this species from a male and a female from Brazil. The male in the British Museum of Natural History is designated as the lectotype.

Discussion.—Pero edentaria is similar to the next species but is slightly larger, more mottled, and the hindwing is heavily infuscated with dull brown. It occurs in southern Brazil, but north of the range of paranaria, although they both occur in Sao Paulo.

Specimens examined.—6 males and 2 females, May and December.

BRAZIL. Minas Gerais: "Minas Geraes"; Rio de Janeiro: Rio de Janeiro; São Paulo: Alto da Serra.

Pero paranaria (Schaus), NEW COMBINATION

Azelina paranaria Schaus, 1897:162.

Male (fig. 252).—Antennae pectinate. Forewing similar to that of edentaria but smaller and more uniform appearing; postmedial line of forewing

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slightly more waved than in edentaria. Hindwing lighter and without dark patches and scaling of edentaria.

Male genitalia (figs. 670, 670a).—Vesica has only one patch of spines and juxta is shaped differently than that of edentaria.

Male eighth sternite.—As in edentaria.

Female (fig. 253).—Forewing larger than in male; angulations of outer margin on veins more produced than in male; wing more heavily flecked with brown scales. Antennae simple.

Female genitalia (fig. 1033).

Variation.—The brown of the median area of the forewing varies from strongly contrasting to almost concolorous with the remainder of the wing. Some specimens have a distinct blue-gray tint, but others are gray brown.

Type.—Schaus based paranaria on a single male from Castro, Paraná, Brazil, in the U.S. National Museum.

Discussion.—Pero paranaria is similar to edentaria but is smaller, more uniform appearing, and without the dark scaling on the hindwing. It also occurs in southern Brazil, but to the south of the preceding species.

Specimens examined.—25 males and 4 females, all year.

BRAZIL. Paraná: Castro, 950 m.; Castro; Santa Catarina: Rio Vermelho; São Paulo: Salesopolis; São Paulo.

Pero flora (Jones), NEW COMBINATION

Azelina flora Jones, 1912:431.

Male (fig. 254).—Antennae pectinate. Forewing light gray brown with strong bluish tint; basal area light gray brown, slightly bluish, not as strongly as subterminal area; antemedial line not as strongly waved as in preceding species; median area yellow brown, lighter and brighter than in either paranaria or edentaria; postmedial line more strongly waved than in either of preceding species; subterminal area blue gray, slightly mottled. Hindwing light gray brown, flecked with dark scales, more so than in paranaria, but not as heavily as in edentaria; postmedial line vague.

Male genitalia (figs. 671, 671a).—Characterized by shape of aedeagus.

Female.—Unknown.

Type.—Described from a single male from Castro, Paraná, Brazil, in British Museum of Natural History.

Discussion.—Pero flora is known only from the type locality, but it is easily recognized by the blue-gray subterminal area of the forewing.

Specimen examined.—1 male.

BRAZIL. Paraná: Castro, 950 m.

Pero amica (Butler)

Azelina amica Butler, 1881:38.
Pero amica fructuosa Prout, 1928:63.

Male (fig. 255).—Antennae pectinate. Forewing blue gray, becoming brown when faded; basal area blue gray, sometimes slightly infuscated with dark scales, particularly toward antemedial line; basal area darker than remainder of wing, often contrasting slightly with subterminal area; discal dot absent, or at least never obvious; postmedial line preceded by dark shade; often patch of yellow in discal cell between shade and postmedial line (particularly in specimens from southern Brazil); usually series of dark blotches following postmedial line. Hindwing markings all vague, almost unicolorous; series of black dots along outer margin. Below blue gray, usually darker toward outer margin; postmedial lines of forewing and hindwing often represented only by dots on veins; white spot on outer margin of hindwing.

Male genitalia (figs. 672, 672a).—Shape of juxta is characteristic.

Male eighth sternite (fig. 672b).

Female (fig. 256).—Forewing larger than in male and often darker, veins usually accented; discal cell never with yellow spot; faded specimens browner than males when faded.

Female genitalia (fig. 1034).

Variation.—There is a moderate amount of variation in this species. Specimens from the Andes are darker and appear browner when faded than do those from southern Brazil. A series of specimens from Castro, Paraná, Brazil, have the yellow spot in the discal cell of the forewing particularly well developed. There appears to be much change from locality to locality in Peru, but the series are not long enough and the specimens too faded to make any definite conclusions about the differences.

Types.—Butler described amica from a single male from "Rio Janeiro" in the British Museum of Natural History. The race fructuosa was based on several specimens from southern Peru, and the type locality was stated to be Agualani, Carabaya, Peru. The male from Agualani with Prout's type label is designated as the lectotype.

Discussion.—Almost all the Peruvian specimens are from high localities, and the two largest series are from Agualani and Limbani, Puno, Peru, both over 9,000 feet elevation. The disjunct distribution of amica is odd, but not unique.

Specimens examined.—144 males and 44 females, all year.

BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Itatiaya, Petropolis; Rio Janeiro; Rio Grande do

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Sul: Guarani; Pelotas; Santa Catarina: Rio Vermelho; São Paulo: Alto da Serra; Campos de Jordao, 1200 m.; Sao Paulo; not located: Santa Cruz, Bresil Meridionale. PARAGUAY. Paraguarí: Sapucay. ARGENTINA. Misiones: Haut-Parana, San Ignacio. PERU. Puno: Agualani, 9000 ft.; Agualani, Carabaya; La Oroya, 3000 ft.; Limbani, 9500 ft.; Limbani; Oconeque, 7000 ft.; Oconeque; Quinton, 5000 ft.; Rio Huacamayo, 3100 ft.; Tinguri.

Pero inconstans (Butler), NEW COMBINATION

Azelina inconstans Butler, 1881:38.

Male (fig. 257).--Antennae pectinate. Forewing gray blue; basal area darker than either median or subterminal areas; basal line double; discal dot black; vague median line, running along postmedial line; postmedial line double, partially filled with white; subterminal area with spots of black particularly along postmedial line; series of black dots along outer margin. Hindwing dull brown; postmedial line brown; discal dot dark brown; upper half of subterminal area darker than lower; series of black dots along outer margin. Below dull light gray, heavily infuscated with dark brown, particularly forewings; discal dots of forewing and hindwing black, simple; white patch at apex of forewing.

Male genitalia (figs. 673, 673a).

Male eighth sternite (fig. 673b).

Female (fig. 258).--Known only from single battered female, but probably much like male.

Female genitalia (fig. 1035).

Variation.--The population described is from Rio de Janeiro, the type locality. Specimens from other localities are smaller and duller, sometimes without the blue-gray tint of the typical populations.

Type.--Butler described inconstans from "two specimens from Rio Janeiro." The male with its genitalia on slide BM Geometridae 6726 in the British Museum of Natural History is designated as the lectotype.

Discussion.--Although the male genitalia seem to indicate a relationship with amica, inconstans most closely resembles mollis superficially.

Specimens examined.--7 males and 1 female, April, June, and December.

BRAZIL. Paraná: Castro, 950 m.; Ponta Grossa; Rio de Janeiro: Rio Janeiro; Rio Grande do Sul: Pelotas; São Paulo: Sao Paulo. URUGUAY. Q. Cuervos, Treinta y Tres.

Pero refellaria (Guenée), NEW COMBINATION

Azelina refellaria Guenée, 1857:161.
Azelina gonopteraria var.? peruviae Oberthür, 1883:23.

Male (fig. 259).--Antennae weakly pectinate. Forewing blue gray when fresh, but brown when faded; maculation brown; discal dot small but present; postmedial line fine, brown, and preceded by yellowish shade; shade wider in discal cell than for remainder of its length, preceded by thin dark band; postmedial line followed by variable blotches of black in subterminal area. Hindwing postmedial line present, but not conspicuous, consisting of thin dark line followed by thin light band; subterminal area sometimes darker toward inner margin. Below uniformly light brown to blue gray, with only postmedial line and discal dot of forewing and postmedial line of hindwing present; postmedial lines of both wings waved.

Male genitalia (figs. 674, 674a).--Shape of median process of right valve is characteristic.

Male eighth sternite (fig. 674b).

Female (fig. 260).--Forewing strongly flecked with dark scaling; veins accented; otherwise as in male.

Female genitalia (fig. 1036).

Variation.--Individual and geographical variation is common in this species. Brazilian specimens are usually lighter than those from western South America. Individually there is variation in the development of the black blotches following the postmedial line of the forewing; these vary from well developed to absent. The darkness of the hindwing is also variable. One specimen from Yahuarmayo, Peru, is dark and appears different from any other specimen I have seen. The hindwing of this specimen is almost solid dark brown.

Type.--Guenée's type of refellaria is a female from Brazil and is in the British Museum of Natural History. Oberthür's variety peruviae is based on a single male from Huambo, Amazonas, Peru, and is also in the British Museum of Natural History.

Discussion.--Pero refellaria seems to be common in parts of the Andes and southern Brazil.

Specimens examined.--118 males and 16 females, all year.

BRAZIL. Minas Gerais: Vicosa; Paraná: Castro, 950 m.; Ypiranga; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Petropolis; Rio Janeiro; Rio; Itatiaya; Rio Grande do Sul: Pelotas; Santa Catarina: Blumenau; Donna Emma; Jaragua do Sul; Nova Teutonia; Nova Bremen, 250 m.; Rio Laeiss; Rio Vermelho, 850 m.; São Paulo: Alto da Serra; Santos; Sao Paulo, 750 m. PARAGUAY. Paraguarí: Sapucay; not located: Mborevo; Naso Yubay; Yhu; no specific locality: Paraguay. ARGENTINA. Tucumán: Tucuman. BOLIVIA. La Paz: Corvico [Coroico?], 1800 m.; Suapi; Santa Cruz: "Santa Cruz." PERU. Amazonas: Huambo; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo, 1000 m.; Chanchamayo; Huacapistana, 1800 m.; Satipo; La Merced, Chanchamayo; Pasco: Huancabamba, 5000-6000 ft.; Huancabamba; Puno: Chaquimayo, 2500-3000 ft.; La Oroya, R. Inambari, 6000 ft.; S. Domingo, 6000 ft.; Yahuarmayo, 1200 ft. ECUADOR. Not located: Hacienda Cayandeled, Rio

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Bamba, 4200 ft. COLOMBIA. Santander: Cucuta. GRENADA. Grenada.

Pero gonopteraria (Guenée)

Azelina gonopteraria Guenée, 1857:160.

Male (fig. 261).—Legs slightly lighter than wings. Forewing dark olive green, slightly brownish when faded; antemedial line sometimes with light spots on veins; discal dot absent or not conspicuous; dark band in median area before postmedial line; vague yellowish area in discal cell enclosed between band and postmedial line; postmedial line dull white, thin, preceded by dark, thin line; veins usually accented in subterminal area. Hindwing unicolorous; postmedial lines waved, but not contrasting. Below almost uniform; postmedial lines not contrasting.

Male genitalia (figs. 675, 675a).—Shape of aedeagus is characteristic. Median process of left valve is not cup shaped as in remaining species of this group.

Male eighth sternite (fig. 675b).

Female.—Similar to male, but grayer and darker.

Female genitalia (fig. 1037).

Variation.—The color of the forewing varies from distinctly olive green to dull olive gray. Some specimens also tend to have the inner half of the subterminal area of the forewing above yellowish, sometimes sharply contrasting with the rest of the wing.

Type.—Guenée based gonopteraria on three males and one female from "Nouvelle-Fribourg, Bresil." The male bearing the label "Azelina gonopteraria Guenee no. 253" is designated as the lectotype and is in the British Museum of Natural History.

Discussion.—The olive-green forewing will usually distinguish this species from everything else in this species group.

Specimens examined.—112 males and 25 females, all year.

BRAZIL. Espírito Santo: Espirito Santo; Minas Gerais: Vicosa; "Minas Geraes"; Paraná: Castro, 950 m.; Ponta Grossa; Rio de Janeiro: Itatiaya; Nova Friburgo; Petropolis; Rio Janeiro; Rio; Rio Grande do Sul: Guarani; Pelotas; Porto Alegre; Santa Catarina: Hansa Humboldt, 60 m.; Jaragua do Sul; Nuevo Teutonia; Rio Laeiss, Blumenau; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Alto da Serra, 800 m.; Alto da Serra; Campo Jerado, 1200 m.; Cantareira; Santos; Sao Paulo; not located: Santa Cruz, Bresil Meridionale. PARAGUAY. Not located: Carlos Pfanni. URUGUAY. Montevideo: Montevideo; Sayago. ARGENTINA. Salta: Metan.

Pero olivacea Warren

Pero olivacea Warren, 1904b:578.

Male (fig. 262).—Antennae pectinate with gray band stretching between bases of antennae. Legs olive brown spotted with cream-colored scales. Forewing olive brown; basal area and subterminal area lighter than median area; veins not marked with dark as much as in preceding two species; outer one-fifth of median area darker than inner four-fifths; yellow to orange markings found in gonopteraria absent; postmedial line not straight as in preceding two species, but incurved on M_1 and Cu_2. Hindwing as in chanchamaya. Below similar to preceding two species; postmedial line straight, crenulate, not incurved; hindwing darker than in chanchamaya.

Male genitalia (figs. 676, 676a).—Shapes of costal fold and median process of left valve distinguish this species from other species in group.

Male eighth sternite (fig. 676b).

Female (fig. 263).—Forewing maculation as in male, but brown, varying from brown to yellow brown, some specimens dusted with dark brown scales on yellow-brown base. Below as in male, but brown, not olive brown.

Female genitalia (fig. 1038).

Variation.—Based on the few specimens that I have seen, olivacea is probably very variable. The male varies from olive brown, dark brown, or light gray brown. In the females the darkness of the brown is again variable from brown to yellow brown, and some specimens are heavily dusted with dark scales on a light base.

Type.—Pero olivacea was based on a single male from Tucumán, Argentina. This male is in the British Museum of Natural History.

Discussion.—Pero olivacea is superficially different from the other species in the group, but based on the genitalia, it is placed here.

Specimens examined.—10 males and 16 females, all year.

ARGENTINA. Jujuy: Jujuy; Salta: Metan, 850 m.; Tucumán: Horco Molle; Siambon, 1600 m.; Sierra de la Ramada, 650 m.; Tucuman; not located: Los Vasques.

Pero chanchamaya Poole, NEW SPECIES

Male (fig. 264).—Forewing superficially almost identical to that of gonopteraria, although perhaps browner and not as strongly olive green; never with inner half of subterminal area yellow and contrasting with remainder of wing.

Male genitalia (figs. 677, 677a).—Median process of left valve is cup shaped as in next two species, not simple as in gonopteraria.

Male eighth sternite (fig. 677b).

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Female.—Unknown.

Variation.—Some specimens are darker than others, but most are clearly marked. One specimen is suffused.

Types.—Holotype: Male, "Peru," in U.S. National Museum. Paratypes: 2 males from type locality in American Museum of Natural History, and 1 male in British Museum of Natural History; Chanchamayo, Peru, 2 males in British Museum of Natural History and 1 male in American Museum of Natural History.

Discussion.—This species is superficially similar to gonopteraria, but based on the male genitalia, it is most closely allied to the next species. The two known localities are both very vague; Chanchamayo has been used to designate several localities in Peru.

Specimens examined.—7 males.

PERU. Junín: Chanchamayo; Chanchamayo, 1000 m.; no specific locality: Peru.

Pero buckleyi (Butler), NEW COMBINATION

Azelina buckleyi Butler, 1881:34.
Azelina frigida Butler, 1881:35. NEW SYNONYMY.
Azelina incarum Oberthür, 1883:23. NEW SYNONYMY.

Male (fig. 265).—Antennae pectinate. Palpi brown. Legs cream colored, slightly spotted with brown. Forewing steel gray, usually fading to gray brown in older specimens; basal and subterminal areas steel gray, contrasting with darker, slightly brownish median area; antemedial line dark, with slight purplish tint; median area lighter along costa and toward antemedial line, no sharp demarcations; postmedial line double, inner line fine, purplish, outer black, usually fading out toward inner and costal margins; slightly outward angulation of postmedial line filled with dull yellowish in median area; discal dot small, black; inner half of subterminal area lighter than outer half, sometimes with dark spots along postmedial line. Hindwing steel gray when fresh, suffused with dull brown; postmedial line dull brown, followed by lighter shade; series of black dots along outer margin; fringe brown. Below dull white; postmedial lines of forewing and hindwing represented by series of dots; vague discal dot on each wing; forewing slightly brownish along outer margin.

Male genitalia (figs. 678, 678a, 679-682).—This species may be distinguished from following species by shapes of costal fold and apex of uncus.

Male eighth sternite (figs. 683, 684).

Female (fig. 266).—Larger and darker than male, with forewing and hindwing above sprinkled with dark flecks; otherwise similar to male.

Female genitalia (fig. 1039).

Variation.—This is a variable species, both superficially and in the male genitalia. Most of the variation seems to be geographical. The population described is from Peru. The southern Brazilian male specimens are slightly smaller and tend to have more dark scaling on the upper side of the wings. The Peruvian specimens are the largest of the species, and individuals seem to become smaller as one goes into northern Ecuador, Colombia, and Venezuela. The specimens from Rancho Grande, Venezuela, are the smallest so far collected. The population in Vaupés, Colombia, is much like that of northern Ecuador, but the Tolima population is more similar to the Peruvian populations than those from northern Ecuador. In the male genitalia (figs. 678-682) the Brazilian and Peruvian specimens are much alike, but the Brazilian specimens have the outer end of the costal fold more square than in the Peruvian specimens. In Ecuador and Colombia the last sternite of the male abdomen becomes more and more asymmetrical and the median process of the valve becomes smaller and more square. In specimens from Ecuador and Venezuela the outer end of the costal fold is pointed.

Types.—Pero buckleyi was described from a single male from "Ecuador." This specimen is in the British Museum of Natural History. Butler based frigida on two males from "Rio Janeiro," and the male bearing his type label is designated as lectotype and is in the British Museum of Natural History. Oberthür described incarum from three specimens from Huambo, Amazonas, Peru, only one of which I could find in the British Museum of Natural History. This specimen bearing the label "Typicum specimen" is designated as the lectotype.

Discussion.—Pero buckleyi is widely distributed, but I have no idea of the kind of habitat it prefers.

Specimens examined.—428 males and 22 females, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida. BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Rio Janeiro; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Neu Bremen, Blumenau; Neu Bremen, Rio Laeiss; Nuevo Teutonia; Rio Laeiss, Blumenau; Rio Vermelho, 830 m.; Rio Vermelho; "St. Catherines." BOLIVIA. Cochabamba: Chapare; Charaplaya [Charapaya?], 1200 m.; 65° S, 16° S; Incachaca; R. Cristal Mayu, 1000-2000 m.; Yunga del Espiritu Santo; Yungas del Palmar, 2000 m.; La Paz: La Paz, 1000 m.; Rio Songo, 750 m.; R. Tanampaya; Yungas de la Paz, 1000 m.; no specific locality: Bolivia. PERU. Amazonas: Chachapoyas; El Porvenir, 900 m.; Huambo; River Tabaconas, 6000 ft.; Cusco: Callanga, 1500 m.; Caradoc, Marcapata, 4500 ft.; Huánuco: Cushi, 1900 m.; Pozuzo, 800 m.; Pozuzo, 800-1000 m.; Junín: Chanchamayo, La Merced; Chanchamayo, 1000 m.; Chanchamayo, 1000-1500 m.; Chanchamayo; Estancia Naranjal, San Ramon, 1000 m.; La Merced; Upper Rio Toro, La Merced, 3000 m.; Pasco: Huancabamba, Cerro de Pasco; Oxapampa, 6400 ft.; Oxapampa, 2000 m.; Piura: Quiroz; Puno: Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; Oconeque, 7000 ft.; Quinton, 5000 ft.; Santo Domingo, 6400 ft., 6000 ft., 4000 ft.; Tinguri, 3400 ft.; Tinguri; Uruhuasi, 7000 ft.; San Martin: Huallaga; not located: Pumayaca; San Ramon, 3000 ft.; no specific locality: Peru. ECUADOR. Bolívar: Balzapamba; Chimborazo: Dos Puentes, 1700 ft., km. 99; Huigra, 4000 ft.;

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Loja: El Monje pres Loja; Environs de Loja; Napo-Pastaza: Hacienda la Mascota, Rio Topo, 4500 ft.; Tungurahua: Ambato; El Rosario, 4900 ft.; Zamora: Palanda; Zamora; not located: Hacienda Cayandeled, Rio Bamba, 4200 ft.; Oriente; no specific locality: Ecuador. COLOMBIA. Antioquia: Mesopotamia, 5000 ft.; Boyacá: Muzo; Cundinamarca: Bogota; Finca San Pablo, 3 km. N. Alban, 1800 m.; Tolima: Canon del Tolima, 1700 m.; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Colombia.

Pero cinerea Poole, NEW SPECIES

Male (fig. 267).—Forewing similar to that of buckleyi; median area rusty brown to brown, much richer in appearance than median area in buckleyi; antemedial line double, with area between two lines lighter and browner than basal area; median area with costal edge grayish; postmedial line triple with dark inner line, absent in buckleyi, and enclosing between it and second line yellowish area in discal cell. Hindwing postmedial line slightly lighter than in buckleyi. Below postmedial lines of forewing and hindwing surrounded by suffusion of brown.

Male genitalia (figs. 686, 686a).—Distinguished from buckleyi by shapes of costal fold and apex of uncus.

Male eighth sternite (fig. 685).

Female.—Unknown.

Variation.—There is variation in the depth of the brown of the median area. One of the specimens is very much like buckleyi except for the double antemedial and triple postmedial lines. Not enough specimens are available to comment about geographical variation, but there does not seem to be much.

Types.—Holotype: Male, La Oroya, 3100 ft., [Puno], Peru, G. Ockenden, in American Museum of Natural History. Paratypes: 22 males from type locality in British Museum of Natural History; Santo Domingo, 6000 ft., [Puno], Peru, 5 males in British Museum of Natural History; Tinguri, 3400 ft., [Puno], Peru, 1 male in British Museum of Natural History; Chirimayo, 1000 ft., [Puno], Peru, 1 male in British Museum of Natural History; Rio Songo, 750 m., [La Paz], Bolivia, 3 males in U.S. National Museum; Bolivia, 1 male in U.S. National Museum.

Discussion.—This species is superficially similar to buckleyi. It is easily identified by double antemedial and triple postmedial lines of the forewing above.

Specimens examined.—36 males, all year.

BOLIVIA. La Paz: Corvico [Coroico?], 1800 m.; Rio Songo, 750 m. PERU. Junin: Chanchamayo; Lima: Lima-Chanchamayo; Puno: Chirimayo, 1000 ft.; La Oroya, 3100 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.

GROUP 8

This group is distinctive, although its closest affinities are probably with group 7. The juxta of the male genitalia is modified and has a curious process on the left side extending up the side of the left valve. This process may be homologous with the pseudofurca of the preceding group. In the female the bursa has lost the signum, which has been replaced by a series of three pleats that look very much like a piece of corrugation. This is unique to the group, although the single infolding in group 7 is similar to it. The shape of the eighth sternite of the male, although distinctive, is again similar to the eighth sternite found in group 7.

Pero minima (Butler), NEW COMBINATION

Azelina minima Butler, 1881:41.

Male (fig. 268).—Head, thorax, and legs brown to dark brown. Forewing basal area brown to dark brown; antemedial line brown, but vague, not contrasting; median area usually lighter than remainder of wing, but varying from concolorous to much lighter with yellow tint; median area lightest at costa and inner margin, darkest in middle; discal dot white, linear, preceded by yellowish patch confluent with yellow costa; postmedial line brown, usually vague, sometimes preceded by brownish band in median area; subterminal area uniform brown. Hindwing uniform brown; postmedial line vague. Below light brown, scaled heavily with dark brown; postmedial line of hindwing represented by wide dark brown band.

Male genitalia (figs. 687, 687a).—Shapes of juxta and pseudofurca are characteristic of this species.

Female.—Unknown.

Variation.—The darkness of the median area varies from a uniform brown to yellowish in the upper and lower parts. The specimens from Peru are darker brown and the veins are accented with dark brown.

Type.—Butler described minima from "Six specimens, Rio Janeiro." The male with Butler's type label is designated as the lectotype. This specimen is in the British Museum of Natural History.

Discussion.—This is the most aberrant member of the group. This species is browner than externata and many specimens have the veins accented with brown. These two species are difficult to distinguish superficially, although the male genitalia are quite different.

Specimens examined.—53 males, January and February.

BRAZIL. Rio de Janeiro: Petropolis; Rio Janeiro; Rio; São Paulo: Sao Paulo. PERU. Puno: Oconeque, 7000 ft.; Quinton, 5000 ft.

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Pero externata Warren

Pero externata Warren, 1905b:376.

Male (fig. 269).--Similar to minima in size. Forewing light brown to gray, heavily scaled with dark brown; maculation much more vague, poorly defined; grayer than minima; postmedial line turning in on veins in middle; discal dot small and thin; postmedial line near costa preceded by dark brown band; subterminal area gray with dark spots, particularly near postmedial line.

Male genitalia (figs. 688, 688a).--Shape of juxta is characteristic.

Female (fig. 270).--Forewing almost uniformly brown, heavily scaled with brown; patch on costa poorly developed.

Female genitalia (fig. 1040).

Variation.--There may be considerable variation in this species. In the few specimens that I have seen it ranges from dark brown to almost yellow brown.

Type.--Described from a single male from Castro, Paraná, Brazil, in the British Museum of Natural History.

Discussion.--Pero externata is at first glance most similar to minima, but it is probably much closer to the other members of this species group. It is difficult to distinguish superficially from minima, but is usually grayer and not as well marked.

Specimens examined.--9 males and 2 females.

BRAZIL. Paraná: Castro; Rio de Janeiro: Rio Janeiro.

Pero maculicosta (Warren)

Azelina maculicosta Warren, 1897:488.

Male (fig. 271).--Head, thorax, and legs gray brown to dark brown. Forewing uniform gray brown to dark brown; median area usually only slightly darker than remainder of wing; antemedial line brown, generally not distinct; light yellow patch from bottom of discal dot to costa, contrasting with remainder of wing; discal dot white, linear; many specimens with two dark brown dots on radial veins in median area just before postmedial line; subterminal area almost uniformly colored except linear series of vague darker blotches from middle of costa to about one-third. Hindwing brownish with postmedial lines of forewing and hindwing represented by series of dots along veins; no light patch preceding discal dot on forewing.

Male genitalia (figs. 689, 689a).--Shapes of juxta and pseudofurca are characteristic.

Male eighth sternite (fig. 689b).

Female (fig. 272).--Appearing more striate than male and with postmedial and antemedial lines of forewing accented by lighter band.

Female genitalia (fig. 1041).

Variation.--There is considerable geographical variation in this species. Specimens from the Andes are almost always dark brown, but those from southern Brazil are light gray brown. The coloration of some of the Brazilian specimens is reminiscent of the next species. The Brazilian populations have the coloration of the hindwing considerably less uniform appearing than in the Andean populations, again a characteristic of marcata. Within the Brazilian populations the amount of gray or brown varies; some specimens are almost entirely gray, but others are mostly brown. This is partially a reflection of the amount of brown flecking present. In general, the populations from Brazil are smaller than those from the Andes, and the population from Paraná has the smallest specimens of all.

Type.--Warren described maculicosta from one male from Popayán, Colombia, in the British Museum of Natural History.

Discussion.--Of the six species in this group, this one appears to be the only one that is widespread and common. The light brown of marcata will distinguish it from maculicosta, and the smooth gray of coreata will distinguish it from maculicosta.

Specimens examined.--123 males and 22 females, all year.

BRAZIL. Matto Grosso: Burity, 30 mi. N.E. Cuyaba, 2250 ft.; Minas Gerais: Vicosa; Paraná: Castro, 950 m.; Rio de Janeiro: Petropolis; Rio Janeiro; Rio; Rio Grande do Sul: Santa Rosa; Rondonia: Calama, Rio Madeira; Santa Catarina: Blumenau, R. Laeiss; Blumenau; Iguassu, Parana; Jaragua do Sul; Joinville; Neu Bremen, Rio Laeiss; Nuevo Teutonia; Rio Vermelho, 830 m.; São Paulo: Salto Grande, Paranapanema; Sao Paulo; not located: Santa Cruz. PARAGUAY. Guairá: Independencia; Paraguarí: Sapucay; not located: Buena Vista; Mborovo; Villarica; Puerto Belloni; no specific locality: Paraguay. ARGENTINA. Misiones: Iguazu Falls; Posadas; not located: Puerto Bemberg. BOLIVIA. Cochabamba: Chapare; Charaplaya [Charapaya?], 1300 m.; 65° W, 16° S; Yunga del Espiritu Santo; La Paz: Corvico [Coroico?], 1800 m.; Santa Cruz: Rio Grande, Cordillera. PERU. Amazonas: Chachapoyas; Huambo, 3700 ft.; River Tabaconas, 6000 ft.; Junin: Chanchamayo, 1000 m.; Chanchamayo; Satipo; Lima: Lima; Pasco: Huancabamba, Cerro de Pasco; Oxapampa, 6400 ft.; Puno: La Oroya, R. Inambari, 3100 ft.; San Gabon, 2500 ft.; no specific locality: Peru. ECUADOR. Loja: Environs de Loja; Tungurahua: Hacienda Machay, Valle de Pastaza, Ambato; Rio Verde, Rio Pastaza, 5000 ft. COLOMBIA. Cauca: Popayan.

Pero marcata Poole, NEW SPECIES

Male (fig. 273).--Forewing similar to that of maculicosta but light gray brown; patch on costa more contrasting than in maculicosta. Hindwing grayish with upper half of subterminal area darker than remainder of wing; postmedial line more distinct than in maculicosta. Below almost

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uniformly light grayish, without brown of maculicosta.

Male genitalia (figs. 690, 690a).--Easily separated from maculicosta by shapes of juxta, median processes of valves, and pseudofurca.

Male eighth sternite (fig. 690b).

Female.--Unknown.

Variation.--In the short series available, the black of the upper half of the subterminal area of the hindwing varies from very distinct to only slightly so. The amount of brown scale flecking on the forewing is also variable. The process from the left side of the juxta (pseudofurca) is straighter and heavier in the Colombia specimens, and the fingerlike process from the top of the juxta is slightly longer.

Types.--Holotype: Male, Quincemil, Cusco, Peru, 2400 ft., Sept. 1-6, 1962, L.E. Peña, in American Museum of Natural History. Paratypes: 1 male from type locality in American Museum of Natural History; 2 males from Chapare, Bolivia, 400 m., in American Museum of Natural History; 1 male from Muzo, [Boyacá], Colombia, in British Museum of Natural History; 1 male from "Cundinamarca" in British Museum of Natural History.

Discussion.--Pero marcata is known only from a few scattered localities in the Andes. It is apparently widely distributed but rare and local. Its light coloration will usually distinguish it from both maculicosta and coreata.

Specimens examined.--6 males, July-September.

BOLIVIA. Cochabamba: Chapare, 400 m. PERU. Cusco: Quincemil, 2400 ft. COLOMBIA. Boyacá: Muzo, 400-800 m.; Cundinamarca: Cundinamarca.

Pero coreata Poole, NEW SPECIES

Male (fig. 274).--Forewing lighter and grayer than in maculicosta, almost bluish; yellow patch in median area from bottom of discal dot to costa present, but poorly developed and not contrasting with remainder of wing; blotches in subterminal area absent or small and poorly developed. Hindwing postmedial line very poorly developed, even less than in ochriscripta. Below grayer than in ochriscripta.

Male genitalia (figs. 691, 691a).--Easily identified by shapes of juxta, pseudofurca, and median processes of valves.

Male eighth sternite (fig. 691b).

Female.--Unknown.

Variation.--Some specimens are grayer and bluer than others, and usually they are not as strongly marked as the browner ones.

Types.--Holotype: Male, Canon del Tolima, [Tolima], Colombia, X, 1700 m., Fassl, in U.S. National Museum. Paratypes: 1 male, Torne, Colombia, in British Museum of Natural History; El Congo, Cauca Valley, Colombia, 3 males in British Museum of Natural History; Coreata, Cauca, Colombia, 4 males in British Museum of Natural History; "Colombie," 1 male in U.S. National Museum.

Discussion.--Pero coreata is easily distinguished from ochriscripta by the lack of a contrasting patch on the costa of the forewing, and from maculicosta by its blue-gray appearance and the vagueness of the maculation.

Specimens examined.--11 males, August and October.

COLOMBIA. Tolima: Canon del Tolima, 1700 m.; Torne; not located: Coreata, Cauca Valley; El Congo, Cauca Valley; no specific locality: Colombie.

Pero ochriscripta (Warren), NEW COMBINATION

Azelina ochriscripta Warren, 1904a:133.

Male (fig. 275).--Legs cream colored, dotted with brown. Forewing gray, heavily striate with brown; basal area heavily striate, and not distinct from median area; antemedial line brown, indistinct; median area from lower half of discal dot to costa yellow and strongly contrasting with remainder of wing; discal dot white, linear, with bend in it; postmedial line sharply waved, brown, followed by series of small, dull, dark gray blotches; subterminal area gray with various blotches of darker scaling; fringe brown. Hindwing almost uniformly dark gray brown; postmedial line whitish, vague; series of black dots along outer margin. Below brown to very light brown; postmedial lines of forewing and hindwing mostly represented by series of dots on veins; discal dot of forewing preceded by small yellowish patch, but yellow not extending to costa as on upper side; inner margin of forewing almost white; hindwing uniformly brown.

Male genitalia (figs. 692, 692a).--Characterized by shapes of juxta and pseudofurca.

Male eighth sternite (fig. 692b).

Female (fig. 276).--Almost entirely brown except yellow patch on costa of forewing, without gray of male, and without blotches in subterminal area.

Female genitalia (fig. 1042).

Type.--Warren described ochriscripta from "1 male from Santo Domingo, S.E. Peru, Carabaya, 6000 ft., December, 1901." This specimen is in the British Museum of Natural History.

Discussion.--Pero ochriscripta is easily separated from the other species in this group by the sharply contrasting color of the costa, the striations, and the gray subterminal area with its blotches.

Specimens examined.--22 males and 8 females, June-December.

BOLIVIA. Cochabamba: Yunga del Espiritu Santo; La Paz: Corvico [Coroico?], 1800 m.; La Paz,

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1000 m.; Rio Songo, 750 m.; Yungas de la Paz, 1000 m.; no specific locality: Bolivia. PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Aqualani, 9000 ft.; La Oroya, R. Inambari, 3100 ft.; Oconeque, 7000 ft.; Santo Domingo, 6000 ft.; not located: Tambillo.

GROUP 9

Species group 9 is distinctive and perhaps deserving of generic status. However, it is clearly derived from some part of Pero, and I placed the group here because the structure of the valve resembles that of the next few species groups. The juxta, valve, and aedeagus are all characteristic and unlike anything else in the genus. The females of habenaria and fea are brown, but the females of hanebaria and velutina are like the males. The female of kathina is unknown. A key to males based on superficial appearance follows.

1. Forewing above all brown, no yellow ..... velutina

   Costa of median area of forewing above yellow; usually other areas of yellow in both forewing and hindwing 2

2. Antemedial line of forewing above without projection in discal cell, evenly rounded toward costa, strongly accented with black; outer half of subterminal area of forewing above with rusty-red tint ..... hanebaria

   Antemedial line of forewing above with projection in discal cell, not evenly rounded toward costa, nor strongly accented with black; outer half of subterminal area of forewing above may or may not be tinted with rusty red 3

3. Outer half of subterminal area of forewing above dark gray, not tinted with rusty red; upper projection of antemedial line of forewing above small; basal area of forewing even, dark gray, streaked with black ..... kathina

   Outer half of subterminal area of forewing above not even dark gray, usually slightly tinted with rusty red; upper projection of antemedial line of forewing above larger; basal area of forewing above usually browner, not dark, even gray, streaked with black 4

4. Upper and lower projections of antemedial line of forewing above equal in size or upper larger than lower; antemedial line of forewing above perpendicular to costa ..... fea

   Upper projection of forewing above smaller than lower; antemedial line rounded, turned inward on costa .. habenaria

Pero velutina (Warren), NEW COMBINATION

Azelina velutina Warren, 1900:211.

Male (fig. 277).--Palpi and legs dull brown. Forewing brown; basal area brown, not contrasting with median area; antemedial line brown, clear, but not conspicuous; median area brown, darker in outer one-fifth than inner four-fifths; discal dot dark brown, variable; postmedial line brown, strongly sloping inward toward inner margin, followed by white line. Hindwing dull brown, with poorly marked lighter postmedial line and brown shade in subterminal area paralleling it. Below postmedial lines of forewing and hindwing dentate; discal dot of hindwing brown, large; anal angle of hindwing lighter, but not contrasting with remainder of wing. Abdomen lighter than thorax.

Male genitalia (figs. 693, 693a).--Shapes of valve, subscaphium, and aedeagus are characteristic.

Female.--Similar to male, but usually slightly larger.

Female genitalia (fig. 1043).

Variation.--There is some variation in size, and a few specimens are much smaller than normal. There are also differences in the clarity of the lines and the darkness of the brown of the forewing above.

Type.--This species was described from two males and two females from Castro, Paraná, Brazil. The male with Warren's type label is designated as the lectotype.

Discussion.--Pero velutina is clearly related to the following four species, but superficially it is different. It lacks the yellow of these species, and the postmedial line of the forewing is strongly incurved to the inner margin.

Specimens examined.--9 males and 10 females, May, June, and December.

BRAZIL. Paraná: Castro, 950 m.; Santa Catarina: Rio Vermelho, 830 m.; São Paulo: Sao Paulo, 750 m.

Pero habenaria (Guenée), NEW COMBINATION

Azelina habenaria Guenée, 1857:159.

Male (fig. 278).--Legs with apices of tibiae and inner faces cream colored; remainder of legs dark brown. Forewing brown to dark brown; basal area brown, slightly striate with dark brown; antemedial line with projection in discal cell; antemedial line followed by thin, dark brown band; median area brown in lower half, upper half cream colored to yellow, contrasting with remainder of wing; yellow usually extending farther down on inner side of discal dot than on outer side; discal dot linear; postmedial line brown, followed by thin yellow to cream-colored band, incurved on M_3 and then straight or slightly curving inward to inner margin; lower half of postmedial line followed by light yellow in subterminal area, rest brown; series of white or black dots along outer margin. Hindwing dull brown;

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postmedial line obscure, cream colored; anal angle yellow to cream colored. Below brown with postmedial lines of forewing and hindwing dentate; brown except along cream-colored costa of forewing and inner margin of hindwing; subterminal area of forewing with vague cream-colored patch on lower one-half; anal angle of hindwing with conspicuous patch of cream-colored scales; discal dot of hindwing large and brown.

Male genitalia (figs. 694, 694a).--May be distinguished from next three species by shapes of aedeagus, juxta, and valve.

Female (fig. 279).--Forewing maculation as in male, but all brown, not yellow; discal dot larger than in male; conspicuous light band following postmedial line. Below all brown.

Female genitalia (fig. 1044).

Variation.--There is a slight amount of variation in the distinctness and size of the discal dot of the forewing above.

Type.--Guenée described habenaria from three males and one female, but one of the males was not found in the British Museum. The male with the label "habenaria Gn. Bresil" is designated as the lectotype.

Discussion.--Pero habenaria is similar to the next three species, but it is easily distinguished by the characters given in the key at the beginning of the group.

Specimens examined.--15 males and 1 female.

BRAZIL. Minas Gerais: Minas Geraes; Rio de Janeiro: Campo Bello; Rio Janeiro; Rio; Santa Catarina: "St. Catherines."

Pero kathina Poole, NEW SPECIES

Male (fig. 280).--Forewing similar to that of habenaria, but darker, more uniform gray; basal area dark, uniform gray, not speckled or striate with black; antemedial line followed by thin black band and with small projection into discal cell; median line very vague; yellow following postmedial line a band, not diffuse; outer half of subterminal area uniform dark gray, without rusty-red tint. Below as in habenaria.

Male genitalia (figs. 695, 695a).--Shapes of aedeagus and valve separate this species from others in group.

Female.--Unknown.

Type.--Holotype: Male, "St. Catherines," Brazil, in U.S. National Museum.

Discussion.--Pero kathina is possibly only a race of habenaria.

Specimen examined.--1 male.

BRAZIL. Santa Catarina: "St. Catherines."

Pero hanebaria (Jones), NEW COMBINATION

Azelina hanebaria Jones, 1921:336.

Male (fig. 281).--Forewing basal area gray with slight violet tint; antemedial line with no projection or only small projection in discal cell; antemedial line strongly accented with black; upper half of median area more strongly contrasting than in habenaria; angulation of postmedial line square, rarely rounded as in habenaria. Below as in habenaria.

Male genitalia (figs. 696, 696a).--Shapes of juxta and aedeagus identify this species.

Female (fig. 282).--Similar to male, but slightly larger.

Female genitalia (fig. 1045).

Variation.--There is some variation in the amount of yellow following the postmedial line of the forewing above.

Type.--Jones described hanebaria from a single male from Alto da Serra, Santos, Brazil. This specimen is in the British Museum of Natural History.

Discussion.--Pero hanebaria is easily distinguished from the other species of this group by the characters given in the key. This is the most brightly colored species of the group.

Specimens examined.--20 males and 1 female, all year.

BRAZIL. Rio de Janeiro: Rio de Janeiro; Rio; Santa Catarina: Jaragua do Sul; Neu Bremen, Rio Laeiss; Neu Bremen, 830 m.; São Paulo: Alto da Serra, Santos; Alto da Serra, 800 m.

Pero fea Poole, NEW SPECIES

Male (fig. 283).--Forewing antemedial line with two strong projections, upper larger than in any other species of this complex, and larger than lower; antemedial line not incurved on costa, followed by thin black band; yellow on costa less extensive and less contrasting than in three preceding species; postmedial line folded in on M_3 and then outfolded on Cu_2; yellow to cream-colored scaling following postmedial line more diffuse and less evident than in preceding species. Hindwing lighter than any three previous species. Below as in other members of group.

Male genitalia (figs. 697, 697a).--Shapes of juxta and aedeagus are characteristic.

Female (fig. 284).--Forewing maculation as in male, but brown as in habenaria; no light band following postmedial line.

Female genitalia (fig. 1046).

Types.--Holotype: Male, Castro, Paraná, Brazil, Jones, in U.S. National Museum. Allotype: Female, Rio Vermelho, Santa Catarina, Brazil, 830 m., in British Museum of Natural History. Paratypes:

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2 males from type locality in British Museum of Natural History; 1 male from type locality in U.S. National Museum; 4 males and 1 female from Rio Vermelho, Santa Catarina, Brazil, in British Museum of Natural History.

Discussion.--This is the smallest and dullest colored of the four species with yellow costas in this group.

Specimens examined.--8 males and 2 females, May and June.

BRAZIL. Paraná: Castro, 950 m.; Santa Catarina: Rio Vermelho, 830 m.

GROUP 10

Group 10 is characterized by the structure of the valve of the male genitalia (fig. 296), and it is the first group in the present arrangement of Pero with the valve structure characteristic of almost all the remainder of the genus. The costal fold in group 10 is usually long and large, and often at the base is a strongly spinose process, which is perhaps homologous with the ventral process found in group 1. The eighth abdominal sternite of the male is modified and is similar to the sternite found in group 7.

Group 10 is made up of three large species assemblages, and it includes the largest and possibly the most difficult subgroup of Pero, the denticulata complex.

Pero algerna (Schaus), NEW COMBINATION

Meticulodes algerna Schaus, 1901:182.
Azelina notodontina Thierry-Mieg, 1904:183. NEW SYNONYMY.

Male (fig. 285).--Palpi gray. Legs gray, but tarsi brown. Forewing basal area violet brown except where yellow-brown pale stripe crosses; antemedial line distinct and black; median area violet brown except dull white pale streak; costa of median area black, but not contrasting; postmedial line distinct toward inner margin, but becoming indistinct above pale streak; subterminal area light brown with brown subterminal line (distinct only to pale streak); terminal line distinct and brown. Hindwing dull white, but becoming dark gray toward inner and outer margins; veins beyond postmedial line yellow; black scaling toward inner margin. Below gray; discal dot of forewing a white line; black blotch toward middle of outer margin; hindwing violet brown; yellow dots on veins at outer margin and postmedial line; white toward inner margin.

Male genitalia (figs. 698, 698a).--Characterized by spiculate pad at middle of valve.

Male eighth sternite (fig. 716).

Female.--Similar to male.

Female genitalia (fig. 1047).

Types.--Meticulodes algerna was based on a single male from "Chanchamayo, Peru," in the U.S. National Museum. Azelina notodontina was based on two males in the U.S. National Museum from Huancabamba, Peru, and the specimen with the male genitalia on slide R.W.P. 10538 is designated as the lectotype.

Specimens examined.--26 males and 8 females, June-September.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. PERU. Amazonas: Huallaga; Junin: Chanchamayo; Pasco: Huancabamba, 6-10,000 ft.; Huancabamba; Puno: Oconeque, 7000 ft.; Santo Domingo, 6000 ft. BOLIVIA. Cochabamba: Incachaca.

Pero moritzi (Felder and Rogenhofer), NEW COMBINATION

Meticulodes? moritzi Felder and Rogenhofer, 1873: pl. 123, fig. 27.
Meticulodes ambusta Prout, 1910a:522. NEW SYNONYMY.

Male (fig. 286).--Legs brown, tarsi yellow brown. Forewing basal area yellow brown, heavily flecked with black; antemedial line heavy and black; median area red brown with slightly purple tint when fresh; vague, linear discal dot, median area light yellow brown around it; postmedial line black, thin, most evident toward inner margin; subterminal area yellow brown near inner margin, heavily marked with black and becoming violet gray toward outer margin and costa; suggestion of pale streak in discal cell as in algerna, but not well marked; terminal line yellow brown, but evident only toward costa. Hindwing dull white toward inner margin and base, violet gray on outer margin, and flecked with black toward anal margin; anal margin flecked with yellow brown; fringe red brown. Below forewing dark gray, inner margin dull white, and black blotch at about middle of outer margin; hindwing red brown, flecked with yellow brown and with black postmedial line; discal dot of hindwing obscure.

Male genitalia (figs. 699, 699a).--Characterized by various processes of valve and sclerotized hook at base of vesica.

Male eighth sternite (fig. 717).

Female.--Similar to male.

Female genitalia (fig. 1048).

Variation.--In the series of specimens from Rancho Grande, Venezuela, the intensity of the coloration varies as well as the angulation of the postmedial line of the forewing. The specimens from Peru are bright and more distinctly marked than those from Colombia or Venezuela.

Types.--The type of moritzi is a male from Venezuela in the British Museum of Natural History. Felder and Rogenhofer listed this specimen as a female, but the abdomen on the specimen is glued and probably is not even that of a geometrid. The type of ambusta is a single male from Torne, Colombia, also in the British Museum of Natural History.

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Discussion.--Not much can be said about this species except that it has a spotty distribution. It is probably more closely related to algerna than to propinqua, although it is superficially much more similar to the latter. In moritzi the markings are more distinct than in propinqua and the colors are brighter, without the rough appearance of the next species.

Specimens examined.--35 males and 4 females, June-December.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; no specific locality: Venezuela. COLOMBIA. Tolima: Canon del Tolima, 1700 m.; Monte Tolima, 3200 m.; Torne. PERU. Puno: La Oroya, R. Inambari, 3100 ft.; Santo Domingo.

Pero propinqua (Dognin), NEW COMBINATION

Meticulodes propinqua Dognin, 1913b:50.

Male (fig. 287).--Forewing median area yellow brown, particularly discal cell, but also toward costa, not dark gray as in moritzi, darker just before postmedial line; subterminal area yellow brown, evenly and heavily flecked with brown; terminal line black, not yellow brown. Hindwing dull white, heavily flecked with black and not becoming violet gray toward outer margin as in moritzi; red-brown spot on veins where they reach outer margin; fringe entirely red brown as in moritzi. Below forewing yellow brown on costa; hindwing with anal margin heavily marked with black; discal dot of hindwing well marked.

Male genitalia (figs. 700, 700a).--Distinguished by lack of spine at base of vesica and shapes of uncus and median process of valve.

Male eighth sternite (fig. 718).

Female.--Unknown.

Variation.--Some specimens are slightly more strongly marked than others.

Type.--Described from several males, but one male from "Volcancito, Quindin, 3500 meters" was designated in the description as the type. The two males listed from Monte Tolima are specimens of moritzi. The type is in the U.S. National Museum.

Discussion.--This species is similar to moritzi, but is darker and not as bright or strongly marked. It has a rather odd distribution with specimens from Colombia, Ecuador, and Bolivia, but none from Peru.

Specimens examined.--14 males, January-May.

COLOMBIA. Cundinamarca: Puebla Guasca, Bogota; Tolima: Monte Tolima, 32-3500 m.; Paso del Quindiu, 3500 m.; Volcancito, Quindin [Quindiu], 3000 m. ECUADOR. Tungurahua: Banos, 6800 ft. BOLIVIA. Cochabamba: Yungas del Palmar.

Pero spina Poole, NEW SPECIES

Male (fig. 288).--Palpi dark brown. Legs cream colored, femora dark brown. Forewing basal area light brown, flecked with black scales; antemedial line black, followed by dark shade, forming point in discal cell; median area slightly darker than remainder of forewing, particularly heavily flecked with black toward inner margin; discal dot a long thin white line; radial veins in median area marked with black; postmedial line black, well marked, and toothed inwardly on radial veins; subterminal area light brown, with dark brown subterminal line; terminal line black and broken into smaller pieces. Hindwing dark gray from base to postmedial line and light brown, heavily marked with dark gray from postmedial line to outer margin; series of black dots along outer margin; red-brown patch in anal angle. Below forewing dark gray, but dull white toward inner margin; discal dot present and dull white; hindwing with area from base to postmedial line dark gray; discal dot white, outlined by black line; subterminal area light brown with thick red-brown line running length of middle. Abdomen light brown, but heavily shaded with black scales except toward apex.

Male genitalia (figs. 701, 701a).--Easily recognized by heavy patch of spines at base of costal fold.

Male eighth sternite (fig. 719).

Female.--Similar to male but slightly larger.

Female genitalia (fig. 1049).

Types.--Holotype: Male, Jalapa, [Veracruz], Mexico, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 4 males from type locality in British Museum of Natural History.

Specimens examined.--10 males and 7 females, May, November, and December.

MEXICO. Guerrero: Guerrero; Veracruz: Jalapa; Orizaba; "Vera Cruz." GUATEMALA. Chichicastenango: Quiche, St. Thomax, 7060 ft.; Chimaltenango: Municipio Acatenango, Quisache, 750 m.; not located: Geronimo; Quezaltenango: Volcan Santa Maria; no specific locality: Guatemala. COSTA RICA. Cartago: Irazu, 6-7000 ft. HONDURAS. Rosario.

Pero pobrata Poole, NEW SPECIES

Male (fig. 289).--Palpi dark brown. Legs as in spina. Forewing median area yellow brown, but heavily marked with black toward inner margin, contrasting with top half of median area; radial veins in median area only slightly marked with black, contrasting; discal dot a line, but not contrasting with ground color; subterminal area as in spina, but heavily flecked with black toward costa. Hindwing as in spina. Below as in spina.

Male genitalia (figs. 702, 702a).--Characterized by shapes of subscaphium and spiny process of valve.

Male eighth sternite (fig. 720).

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Female.--Unknown.

Types.--Holotype: Male, Tuis, [Cartago], Costa Rica, VIII, 31, 08, 5800 ft., in U.S. National Museum. Paratypes: 3 males from Orosi, [Cartago], Costa Rica, in British Museum of Natural History.

Specimens examined.--4 males, July.

COSTA RICA. Cartago: Orosi, 1200 m.; Tuis, 5800 ft.

Pero mnasilaria (Oberthür), NEW COMBINATION

Azelina mnasilaria Oberthür, 1912:297.

Male (fig. 290).--Forewing basal area slightly darker than in spina; antemedial line thinner and not as heavily marked with black; fine black line paralleling postmedial line in median area; dentations of postmedial line near costa not as well marked as in spina; subterminal area slightly darker than in spina. Below darker than in spina, appearing black on dull white background, particularly in fresh specimens.

Male genitalia (figs. 703, 703a).--Characterized by shapes of subscaphium and spiny process of valve.

Male eighth sternite (fig. 721).

Female.--Similar to male, but slightly larger.

Female genitalia (fig. 1050).

Variation.--Although this species is widely distributed, it is rather uniform appearing throughout its range. The intensity of the brown of the forewing varies, a difference noticeable only when the specimens have faded. The shape of the subscaphium in the male genitalia is also variable.

Type.--Oberthür described this species from four specimens, one male and three females. The male is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--This species is much like spina superficially, and the best way to distinguish it from that species is by the presence of the black line in the median area paralleling the postmedial line. This is the most widely distributed species of this complex.

Specimens examined.--78 males and 11 females, all year.

MEXICO. Chiapas: Hourburg; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2300 ft.; Veracruz: Orizaba. GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, 1350 m.; Baja Verapaz: Chejel. COSTA RICA. Cartago: Juan Vinas; Orosi, 1200 m.; Sitio; Tuis; Puntarenas: Monteverde, 4600 ft.; not located: Carreblanca. PANAMA. Not located: Lino, 800 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; nr. Valencia, 1500-3000 ft. BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Rio de Janeiro; Rio Janeiro; Santa Catarina: Hansa Humboldt, 60 m.; Hansa Humboldt; Jaragua do Sul; Nova Bremen, 250 m.; Neu Bremen; Rio Vermelho, 850 m.; "St. Catherines"; São Paulo: Alto da Serra; Alto da Serra, Santos, 800 m.; Sao Paulo; Serra do Cubotas. PERU. Puno: La Oroya, Rio Inambari, 3100 ft. ECUADOR. Bolívar: Balzapamba. COLOMBIA. Antioquia: Mesopotamia, 5000 ft.; Boyacá: Medina, 500 m.; Muzo, R. Cantinero, 400 m.; Muzo, 400-800 m.; Cundinamarca: Bogota; Valle del Cauca: Palmira; not located: Jimenez, 1600 ft.; San Gabon, 800 m.

Pero turba Poole, NEW SPECIES

Male (fig. 291).--Palpi brown. Legs cream colored except brown femora. Forewing basal area light brown, flecked with black; median area slightly darker than basal area, heavily flecked with black, particularly toward inner margin; discal dot white and moderately distinct; postmedial line crenulate and each tooth with white dot at tip; radial veins marked with black in median area; subterminal area concolorous with basal area, with thick brown subterminal line, followed by yellow at inner margin (toward costa brown fades out and only yellow line remains, with perhaps little spots of brown); terminal line black, broken and distinct only toward costa. Hindwing dark gray; postmedial line black, followed by yellow and brown spot in anal angle; outer margin with red-brown spots where veins reach it; series of black dots along outer margin. Below forewing dark gray; discal dot dull white; hindwing dark gray from base to postmedial line; subterminal area of hindwing yellow brown, striate with black and dark brown. Abdomen becoming cream colored toward apex.

Male genitalia (figs. 704, 704a).--Characterized by shape of spiny process of valve.

Male eighth sternite (fig. 722).

Female.--Similar to male, but with teeth of postmedial line of forewing above slightly more distinct.

Female genitalia (fig. 1051).

Types.--Holotype: Male, Coosnipata, Paucartambo, Cusco, Peru, F.L. Wygodzinsky, 15-II-51, in American Museum of Natural History. Allotype: Female, Santo Domingo, [Puno], Peru, in U.S. National Museum. Paratypes: 4 males and 4 females from Santo Domingo, Peru, in British Museum of Natural History; 1 female from Santo Domingo in U.S. National Museum; 1 male, Chaupe, Peru, 6100 ft., in British Museum of Natural History; 1 male from Huancabamba, N.E. Peru, 5000-6400 ft., in Cornell University collection.

Discussion.--Pero turba is found at higher altitudes, and is known from only a few specimens.

Specimens examined.--8 males and 6 females, October-February.

ECUADOR. Tungurahua: El Topo, Rio Pastaza, 4200 ft. PERU. Cusco: Coosnipata, Paucartambo; Pasco: Huancabamba, 5000-6400 ft.; Puno: Santo Domingo, 6000 ft.; not located: Chaupe, 6100 ft.

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Pero nasala Poole, NEW SPECIES

Male (fig. 292).—Palpi brown. Legs cream colored except for brown femora. Forewing basal area light brown, heavily flecked with black scales; median area darker brown than basal area, heavily marked with black, particularly toward inner margin; radial veins in median area marked with black; discal dot a white line; postmedial line crenulate for its entire length and not strongly bent in toward inner margin as in spina; subterminal area light brown, heavily marked with black and red-brown striations; subterminal line much less distinct than in spina. Below dull white, heavily marked with black; forewing with distinct dull white discal dot; hindwing with discal dot surrounded by black line, but not well marked; subterminal area of hindwing with dark brown striations on dull white background, but not forming any distinct markings.

Male genitalia (figs. 705, 705a).—Characterized by shapes of subscaphium and spiny process of valve.

Male eighth sternite (fig. 723).

Female.—Similar to male.

Female genitalia (fig. 1052).

Types.—Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 2 males and 1 female from type locality in U.S. National Museum.

Specimens examined.—3 males and 3 females.

BOLIVIA. Cochabamba: Incachaca; no specific locality: Bolivia.

Pero pala (Dognin), NEW COMBINATION

Meticulodes pala Dognin, 1896:142.
Pero crepusculascens Prout, 1928:66. NEW SYNONYMY.

Male (fig. 293).—Forewing basal area light brown with some black scaling, but not obscuring light brown appearance; median area light brown to yellow brown; discal dot large, conspicuous; median area darker than basal area, marked with black striations toward inner margin; subterminal area yellow brown with brown line from inner margin to about half way up wing; crenulate yellow brown line from about middle of subterminal area to costa; terminal line black and present from about middle of wing to costa, but broken on veins. Hindwing yellow brown heavily scaled with black, particularly from base to postmedial line; postmedial line black, followed by light shade; subterminal area yellow brown with black scaling; series of black dots along outer margin; fringe with red-brown dots at veins. Below forewing gray on dull white background, with large, conspicuous discal dot; hindwing yellow brown, heavily marked with gray brown; discal dot white with large, conspicuous black ring surrounding it; postmedial line followed by light shade; inner half of subterminal area brown and contrasting with outer half. Abdomen light brown and lighter at apex than base.

Male genitalia (figs. 706, 706a).—Can be distinguished from preceding species and next two by shapes of spiny process of valve, juxta, and subscaphium.

Male eighth sternite (fig. 724).

Female.—Similar to male.

Female genitalia.—Unknown (only female is lacking its abdomen).

Variation.—The specimens from Colombia and the type of crepusculascens are a richer brown than the two specimens from Loja. The blackish striations are considerably heavier in the Loja specimens than they are in any other specimens. The type of crepusculascens from Napo-Pastaza, Ecuador, is the brightest and best marked specimen of any.

Types.—Dognin described pala from "une paire" from Loja, Ecuador. The male is designated as lectotype and is in the U.S. National Museum. Prout described crepusculascens from "two males" from Baeza, Ecuador. I could find only one specimen from this locality in the British Museum, and this specimen is designated as the lectotype.

Discussion.—This species, nasala, amniculata, and mitraria are closely related as shown by the male genitalia, although they appear superficially different. Possibly they represent races of one species, but this is unlikely because of the differences in the male genitalia and general appearance. The limited ranges of each of these four species and a lack of specimens from Peru are interesting. The two Colombian specimens of pala are from almost 10,000 feet elevation, and these four species are possibly limited to high localities.

Specimens examined.—6 males and 1 female, January-March.

COLOMBIA. Tolima: Monte Tolima, 3200 m.; Tochesito, Quindiu, 3000 m. ECUADOR. Loja: Environs de Loja; Napo-Pastaza: Baeza.

Pero amniculata (Warren), NEW COMBINATION

Meticulodes amniculata Warren, 1907:310.

Male (fig. 294).—Forewing gray brown; basal area light brown, heavily flecked with dark, dull brown; median area dull brown, lower half darker than upper; discal dot a white, thick line; discal cell yellowish between discal dot and first projection of antemedial line, less so between discal dot and postmedial line; postmedial line crenulate, black; subterminal area concolorous with basal area, with vague darker band in lower half. Hindwing dull brown; postmedial line thin, brown, followed by light band; anal angle slightly darker.

Male genitalia (figs. 707, 707a).—Characterized by shapes of juxta and subscaphium.

Male eighth sternite (fig. 725).

Female.—Unknown.

Type.--Described from a single male from Cushi, Huánuco, Peru, in the British Museum of Natural History.

Discussion.--Pero amniculata is superficially closest to nasala, but the yellow in the discal cell of the forewing above between the discal dot and the antemedial line of amniculata will separate it from nasala.

Specimen examined.--1 male.

PERU. Huánuco: Cushi, 1900 m.

Pero mitraria (Oberthür)

Azelina mitraria Oberthür, 1912:297.

Male (fig. 295).--Forewing brown to yellow brown; basal area yellow brown, darker toward base and inner margin; antemedial line black, contrasting; lower half of median area dark brown, upper half yellow brown; discal dot a white bar; postmedial line black, crenulate; subterminal area light brown, not concolorous with basal area; vague light band in middle of upper half of subterminal area and dark band in lower half following postmedial line. Hindwing dull brown, not striate with dark brown; postmedial line brown, followed by light band; yellow-brown patch in anal angle following postmedial line; outer margin lighter than remainder of wing.

Male genitalia (figs. 708, 708a).--Characterized by shape of subscaphium.

Male eighth sternite (fig. 726).

Female.--Unknown.

Type.--Described from a single male from "Hacienda Cayandeled, Rio Bamba," Ecuador, in the British Museum of Natural History.

Specimen examined.--1 male, February.

ECUADOR. Not located: Hacienda Cayandeled, Prov. Rio Bamba, versant quest Cordell, 4200 ft.

Pero periculosaria (Oberthür), NEW COMBINATION

Azelina periculosaria Oberthür, 1883:27.

Male (fig. 296).--Palpi dark brown. Legs cream colored except for brown femora. Forewing basal area brown, speckled with dark brown; antemedial line black, not followed by shade; upper half of median area light brown to brown, dark brown in lower half; discal dot white, linear; postmedial line black, marked with short white dashes on radial veins; subterminal area light brown to brown with indefinite dark red-brown shade from inner margin to about middle of wing; subterminal area lighter along outer margin from middle of wing to inner margin; upper half of subterminal area gray brown, but sometimes with some brown showing. Hindwing gray brown with white postmedial line; red-brown spots in fringe at ends of veins. Below forewing almost uniformly dull gray brown; discal dot only slightly apparent; hindwing uniform brown with vague brown postmedial line followed by white shade, strongest in anal angle; discal dot white and partially outlined in black.

Male genitalia (figs. 709, 709a).--Can be distinguished from genitalia of caliginosa and fawna by shape of subscaphium.

Male eighth sternite (fig. 727).

Female.--Similar to male, but somewhat darker and larger.

Female genitalia (fig. 1053).

Variation.--There is considerable geographical and individual variation in this species. The description is based on Bolivian and Peruvian populations. The population from Tucumán, Argentina, is smaller than that from Peru or Bolivia and is darker and smoother appearing. The contrast between the upper and lower halves of the median area is not nearly as great in this Argentinean population as in the Andean populations. The specimens from Loja, Ecuador, are brighter and not as darkly striate as those from Bolivia or southern Peru. Some specimens from Amazonas, Peru (the type locality), approach fawna in appearance. One female from northern Peru is particularly dark. Three specimens from "Colombie" are heavily striate with black and are dark below, and the single specimen from Rancho Grande, Venezuela, is very dark and small. The one specimen from Chiriqui, Panama, is like the Peruvian specimens, but may be mislabeled. The shape of the subscaphium also varies slightly, but significantly so only in the Colombian and Venezuelan populations.

Type.--Oberthür described this species from several males. The male with his type label and figured in the original description is designated as the lectotype.

Discussion.--This is probably a common species in certain parts of the Andes, but it is possibly rare in Colombia and Venezuela. Pero periculosaria is superficially similar to the next two species, but the male genitalia are distinctive. Pero fawna is smaller and light brown and caliginosa is dark, uniform brown without black striations.

Specimens examined.--197 males and 18 females, all year.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. COLOMBIA. Antioquia: El Cerro, Frontino, 6000 ft.; Cauca: Popayan; Choco: Siato, Rio Siato, Slopes of Choco, 5200 ft.; Cundinamarca: Finca San Pablo, 3 km. N. Alban, 1800 m.; Pacho, 2200 m.; Tolima: Canon del Tolima, 2700 m.; Monte Tolima, 3200 m.; Torne; no specific locality: Colombie. ECUADOR. Loja: El Monje, pres Loja; Environs de Loja; Loja; Napo-Pastaza: Baeza; Sarayacu; no specific locality: Ecuador. PERU. Amazonas: Chachapoyas; El Porvenir, 900 m.; Huambo; River Tabaconas, 6000 ft.; Cusco: Callanca, 1500 m.; Huánuco: Cushi, 1900 m.; Junin: Chanchamayo; Pasco: Huancabamba, 5000-6400 ft.; Huancabamba,

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6-10,000 ft.; Huancabamba, Nord du Perou; Oxapampa, 2000 m.; Puno: Agualani, 9000 ft.; Ia Oroya, 3000-3100 ft., Rio Inambari; Oconeque, 7000 ft.; Quinton, 5000 ft.; Santo Domingo, 6500 ft.; Tinguri, 3400 ft.; Tinguri; Uruhuasi, 7000 ft.; not located: Chaupe, 6100 ft.; San Martin: Huallaga; no specific locality: Peru. BOLIVIA. Cochabamba: Chapare; Incachaca; Yungas del Palmar, 2000 m.; La Paz: Chulumani, 2000 m.; R. Solicame, 1200 m., 67° W, 16° S; La Paz; Salampioni, 800 m.; Yunga del Espiritu Santo; Yungas la Paz; no specific locality: Bolivia. ARGENTINA. Tucumán: Tucuman. PANAMA. Chiriqui: Chiriqui [probably mislabeled].

Pero caliginosa (Dognin), NEW COMBINATION and NEW STATUS

Meticulodes periculosaria var. caliginosa Dognin, 1913b:50.

Male (fig. 297).--Forewing not striate as in periculosaria; median area brown to dark brown, often with slightly violet tint in basal half; costal half of median area lighter, but not conspicuously contrasting with lower half; contrasting white discal dot, larger than in periculosaria; postmedial line more even than in periculosaria; subterminal area brown with only hint of darker shade in lower half; apex of wing almost uniformly dark. Hindwing as in periculosaria but more uniform. Below as in periculosaria, but more uniform, darker, and with discal dot of hindwing obvious; series of white dots along postmedial line of hindwing.

Male genitalia (figs. 710, 710a).--Shapes of subscaphium and costal fold are distinctive.

Male eighth sternite (fig. 728).

Female.--Similar to male.

Female genitalia (fig. 1054).

Variation.--Pero caliginosa is possibly a geographically variable species, but only a few specimens are known. The specimens from Colombia vary in the color of the median area, from uniformly dark brown to specimens with a brown costa as in periculosaria. The one Ecuadorian specimen is different and is almost uniformly orange brown with the lower half of the median area only slightly darker than the costal half. The tooth of the antemedial line in the discal cell in this specimen is not as well developed as in specimens from the type locality. The specimen from Loja, Ecuador, is orange brown below, not brown.

Types.--Dognin described caliginosa from two males and one female from Tochesito, Quindiu, Colombia. Although one of the males bears a U.S. National Museum type label, it does not have Dognin's type label, which is on the second male. This second male is designated as the lectotype.

Discussion.--This seems to be an oddly distributed species with one specimen known from Ecuador and all the others from the Department of Tolima, Colombia. It probably occurs in high localities. The distinctive appearance of the Ecuadorian specimen is amazing, but based on the male genitalia it is placed with this species. The uniform dark brown forewing of caliginosa will usually distinguish it from either fawna or periculosaria.

Specimens examined.--17 males and 2 females, January, February, and August.

COLOMBIA. Tolima: Monte Tolima, 2800 m.; Monte Tolima, 3200 m.; Paso del Quindiu, 3500 m.; Tochesito, Quindiu, 3000 m.; Torne. ECUADOR. Loja: Environs de Loja.

Pero fawna Poole, NEW SPECIES

Male (fig. 298).--Forewing similar to that of caliginosa, but smaller and soft, light brown; median area almost uniform throughout, but slightly darker just before lower half of postmedial line; discal dot white, well developed; white dots on radial veins on postmedial line well developed; subterminal area almost uniform light brown with only a suggestion of any variegation. Hindwing as in caliginosa, but lighter. Below uniform brown, particularly hindwing; hindwing with postmedial line white, not broken into white dots as in caliginosa.

Male genitalia (figs. 711, 711a).--Characterized by shapes of subscaphium, juxta, and costal fold.

Male eighth sternite (fig. 729).

Female.--Unknown.

Types.--Holotype: Male, Torne, [Tolima], Colombia, August, in British Museum of Natural History. Paratypes: 3 males from type locality in British Museum of Natural History; 1 male from "Colombie" in U.S. National Museum.

Discussion.--Pero fawna is related to caliginosa, but it is smaller and soft light brown, not dark brown. It resembles some specimens of periculosaria from Amazonas, Peru, but the genitalia are different and will distinguish this species.

Specimens examined.--5 males, August.

COLOMBIA. Tolima: Torne; no specific locality: Colombie.

Pero ochreicosta (Dognin), NEW COMBINATION

Meticulodes ochreicosta Dognin, 1913b:51.

Male (fig. 299).--Palpi brown to dark brown. Thorax dark brown to brown. Legs cream colored, except for dark brown femora. Forewing basal area yellow brown, but striate with brown; antemedial line black; costal half of median area yellow brown; median area slightly darker toward postmedial line than toward antemedial line; discal cell light from discal dot to antemedial line; discal dot white, not contrasting; median area from bottom of discal dot to inner margin dark brown with few darker striations; postmedial line black, heavier toward inner margin; postmedial line tending to become

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diffuse and to break up in area of radial veins; subterminal area light brown to cream colored, but with heavy brown striations forming a shade in lower half of subterminal area at about one-third way from postmedial line to outer margin; upper half of subterminal area dark brown along postmedial line, followed by light brown line; grayish shade along outer margin. Hindwing base gray brown with postmedial line black, but indistinct, followed by white shade; subterminal area orange brown toward anal angle, but becoming brown gray toward costal margin; series of black dots along outer margin, particularly well developed in anal angle. Below forewing brown from base to postmedial line; dull white contrasting discal dot; postmedial line dull white at inner margin, becoming black toward costa; postmedial line marked with white dashes on veins; subterminal area brown with gray-brown shade along outer margin in upper half, and with light brown shade in lower half along outer margin; hindwing yellow brown, heavily striate with dark brown scales from base to about middle of subterminal area; discal dot white, outlined with black, but not contrasting with remainder of wing; postmedial line black, followed by cream-colored shade, with short cream-colored shades on veins. Abdomen light brown, darker toward base.

Male genitalia (figs. 712, 712a).--Characterized by shapes of costal fold and juxta.

Male eighth sternite (fig. 730).

Female.--Similar to male.

Female genitalia (fig. 1055).

Variation.--Little if any.

Type.--Dognin described this species from three males, but a male from Tochesito, Quindiu, [Tolima], Colombia, was designated as the type. This specimen is in the U.S. National Museum.

Discussion.--Pero ochreicosta probably has a distribution limited to the high mountains of Colombia; all specimens available are from elevations near 10,000 feet. Pero ochreicosta is a distinctive species, but is probably most closely related to periculosaria, fawna, and caliginosa.

Specimens examined.--6 males and 4 females.

COLOMBIA. Tolima: Monte Tolima, 3200 m.; Monte Tolima, 3500 m.; Paso del Quindiu, 3500 m.; Tochesito, Quindiu, 3000 m.

Pero cyclodaria (Felder)

Azelina cyclodaria Felder, 1873: pl. 123, fig. 16.
Meticulodes albiditata Prout, 1916:189. NEW SYNONYMY.

Male (fig. 300).--Palpi and legs light brown. Forewing light brown; basal area light brown flecked with black and dark brown; tooth of antemedial line between cubitus and anal veins followed by black scaling; median area light brown, especially light in middle of wing, darker toward both inner margin and costa; discal dot white and conspicuous; brown shade preceding postmedial line, especially conspicuous toward inner margin; postmedial line slightly crenulate; subterminal area light brown, bottom half finely striate with dark brown, striations forming more or less conspicuous brown band from middle of subterminal area to inner margin; apex of wing light brown, with gray patch toward middle of outer margin. Hindwing light brown, infuscated with gray, particularly toward base; postmedial line poorly marked; outer half of subterminal area lighter than inner half; inner half of subterminal area light red brown; series of black dots along outer margin. Below light brown with slightly grayish cast; postmedial line of hindwing wavy, black, and conspicuous, followed by lighter shade; subterminal area with dark brown band in it. Abdomen light brown, darker toward base.

Male genitalia (figs. 713, 713a).--Characterized by shapes of subscaphium and juxta.

Male eighth sternite (fig. 731).

Female.--Similar to male.

Female genitalia (fig. 1056).

Variation.--The shape of the antemedial line of the forewing above varies as well as the black scaling that follows it. The discal dot is variable in strength. There is little if any geographical variation.

Types.--Pero cyclodaria was based on a single male from "Venezuela" now in the British Museum of Natural History. Prout described albiditata from a male from "Jimenez, W. Colombia." This type is also in the British Museum of Natural History.

Discussion.--This species is widely distributed in the Andes and is common in places. Its range seems to be disjunct from that of isotenes.

Specimens examined.--80 males and 16 females, all year.

VENEZUELA. No specific locality: Venezuela. COLOMBIA. Tolima: Torne; not located: Fusagasuga, pres Bogota; Jimenez, 1600 ft.; Sierra del Libane, 6000 ft.; no specific locality: Colombia. ECUADOR. Loja: El Monje pres Loja; Napo-Pastaza: Baeza. PERU. Amazonas: Chachapoyas; Junin: Chanchamayo; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6000 ft.; Oxapampa, 2000 m.; Puno: Agualani, 9000 ft.; Limbani, 9500 ft.; Oconeque, 7000 ft.; R. Slucuri, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri; Uruhuasi, 7000 ft.; not located: Chaupe, 6100 ft. BOLIVIA. Cochabamba: Incachaca; Yungas del Palmar, 3000 m.; La Paz: Yunga del Espiritu Santo.

Pero xylinaria (Guenée)

Azelina xylinaria Guenée, 1857:162.
Meticulodes xylochromaria Walker, 1860b:296.

Male (fig. 301).--Forewing basal area as in cyclodaria, but darker and more heavily striate;

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discal dot black; black shade running along cubitus vein from discal dot to postmedial line; crenulations of postmedial line on radial and median veins not as pronounced as in cyclodaria; subterminal area as in cyclodaria, but darker. Below as in cyclodaria.

Male genitalia (figs. 714, 714a).—Characterized by shapes of uncus, juxta, and costal fold.

Male eighth sternite (figs. 732, 733).

Female.--Similar to male.

Female genitalia (fig. 1057).

Variation.--Specimens from southern Brazil are marked with considerably more black than specimens from the rest of South America and Central America. The variation in the shape of the eighth abdominal sternite of the male is considerable and embarrassing in a group in which I have used it as a main character. Two basic forms occur, one in Central America and northern and western South America (fig. 733) and another in southern Brazil (fig. 732).

Types.—Guenée named xylinaria from a single male from "Brasil." This specimen is in the British Museum of Natural History. Walker based xylochromaria on a male from Brazil, and this specimen is in the Hope Museum, Oxford University.

Discussion.--This species is superficially similar to cyclodaria, but can almost always be identified by the absence of a white discal dot in the forewing and its replacement by a black dot or line. It is darker appearing than cyclodaria, and the striations of the forewing are black, not brown. From the meager data available, it would appear that xylinaria occurs at lower elevations than cyclodaria. It is widely distributed and is possibly a species of secondary forest. The southern Brazil populations are distinct in several ways, particularly the eighth sternite of the male abdomen, and this population could conceivably be a separate species.

Specimens examined.--159 males and 45 females, all year.

MEXICO. Veracruz: Huatuxco; Jalapa; Misantla; Orizaba. GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz; Baja Verapaz: Purulha; Quezaltenango: Volcan Santa Maria. COSTA RICA. Cartago: Cachi; Cartago; Irazu, 6-7000 ft.; Juan Vinas; Orosi, 1200 m.; Tuis; Heredia: Mount Poas; Puntarenas: Monteverde, 4600 ft.; not located: Carreblanco. PANAMA. Chiriqui: Chiriqui; V. de Chiriqui, 2-3000 ft. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas. BRAZIL. Parana: Castro, 950 m.; Ponta Grossa; Rio Grande do Sul: Porto Alegre; Santa Catarina: Blumenau; Iguassu, Parana; Jaragua do Sul; Neu Bremen, Rio Laeiss; Neu Bremen; Nova Bremen, 250 m.; Nova Teutonia, 27-11 S, 52-23 W; Nova Teutonia; "St. Catherines"; São Paulo: Alto da Serra; not located: Canto Gallo. ARGENTINA. Misiones: Alto Parana; Iguazu Falls. BOLIVIA. Cochabamba: Incachaca; Yunga del Espiritu Santo; no specific locality: Bolivia. PERU. Amazonas: River Tabaconas, 6000 ft.; Junin: Chanchamayo, 1000 m.; Chanchamayo, La Merced; Pasco: Huancabamba, 3000 ft.; Piura: Quiroz [Quiros?]; Puno: La Oroya, R. Inambari, 3100 ft.; Santo Domingo, 6000 ft.; not located: R. Colorado, 2500 ft. ECUADOR. Bolívar: Balzapamba; Esmeraldas: S. Domingo de los Colorados; Imbabura: Paramba. COLOMBIA. Boyacá: Muzo, 460-800 m.; Cauca: Juntas; Cundinamarca: Finca San Pablo, 3 km. N. Alban, 1800 m.; Pacho, 2200 m.

Pero isotenes Prout

Pero isotenes Prout, 1928:66.

Male (fig. 302).--Forewing darker than that of cyclodaria; basal area light brown, almost cream colored on upper half; dark brown line or indefinite blotch in lower half of basal area; antemedial line with large tooth projecting into discal cell, and other just below cubital veins; median area light brown; discal dot white, vaguely outlined with black; black flecking around discal dot in discal cell; dark brown to black shade preceding postmedial line from inner margin to Cu_1; subterminal area light brown with fine striations and darker shade from inner margin to M_1 at about one-third way from postmedial line to outer margin; outer margin darker than remainder of subterminal area except at apex; apex of wing light except for dark veins. Hindwing as in cyclodaria, but darker and with teeth of outer margin more pronounced. Below forewing light brown, heavily suffused with gray brown from base to postmedial line; discal dot white, conspicuous; postmedial line black, contrasting with remainder of wing; subterminal area light brown, but darker than forewing; postmedial line heavy, black; discal dot white, partially outlined in black.

Male genitalia (figs. 715, 715a).--Characterized by shapes of subscaphium and costal fold of valve.

Male eighth sternite (fig. 734).

Female.--Similar to male, but perhaps not as strongly marked.

Female genitalia (fig. 1058).

Variation.--There is little, if any, variation although some specimens are slightly more mottled appearing than others.

Types.--Described from several males, but Prout stated that the type is one of two males from Torne, Colombia. The male from this locality bearing Prout's type label is designated as the lectotype, and is in the British Museum of Natural History.

Discussion.--Pero isotenes resembles cyclodaria but is smaller and darker.

Specimens examined.--21 males and 4 females, August-November.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida, 1630 m.; Merida. COLOMBIA. Cundinamarca: Finca San Pablo,

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3 km. N. Alban, 1800 m.; Pacho, 2200 m.; Tolima: Canon del Tolima, 2500 m.; Canon del Tolima; Rio Taches, Quindiu, 2400 m.; Tochesito, Quindiu, 3000 m.; Torne; not located: Sierra del Libane, 6000 ft.

denticulata Species Complex

The denticulata species complex is one of the largest and taxonomically most difficult in Pero. Although the complex has a distinctive appearance, all the species except ravida are similar, often identical. I have found that within a locality, given the series, the species can be distinguished; however for positive identification the male genitalia must be used. I have not been able to construct a key based on superficial appearance. Females are known only for a few of the species, although I have seen a few females that I have not been able to associate with males.

The complex is found almost entirely in the Andes, although two species have been taken in southern Central America and one in the northern cordillera of Venezuela.

Pero pretensa Poole, NEW SPECIES

Male (fig. 303).--Antennae slightly serrate. Palpi brown, outer edge cream colored. Legs cream colored streaked with brown. Forewing basal area brown, lighter along antemedial line toward costa; antemedial line shaded on outside with brown toward costa; median area brown, lighter toward costa; discal dot double, usually consisting of upper white line and lower spot; outer one-fourth of median area darker than inner three-fourths; postmedial line very faintly edged outwardly with light band; subterminal area brown, striate with dark brown; light streak in subterminal area from outer angle to near middle of postmedial line and another more vague one from middle of outer margin to beginning of postmedial line on costa. Hindwing dull brown; postmedial line a white, slightly dentate light band; no light patch in anal angle. Below brown; conspicuous white patch in lower half of subterminal area of forewing; postmedial lines of forewing and hindwing cream colored; discal dot of hindwing black, large, divided into quarters; subterminal area of hindwing slightly darker along postmedial line.

Male genitalia (figs. 735, 735a).--Shapes of subscaphium and costal fold are characteristic.

Male eighth sternite (fig. 750).

Female.--Similar to male.

Female genitalia (fig. 1059).

Variation.--The specimens from Chaupe, Peru, are darker and smaller than individuals from southern Peru. The specimens from Loja, Ecuador, may be lighter than those from the type locality, but it is difficult to tell because they are in poor condition.

Types.--Holotype: Male, La Oroya, 3100 ft., Peru, Nov. and Dec. 1905, G. Ockenden, in Cornell University collection. Allotype: Female, Bolivia, probably from Incachaca, Cochabamba, in U.S. National Museum. Paratypes: 38 males in British Museum of Natural History from type locality; 2 males from type locality in Cornell University collection.

Discussion.--This is one of the commonest members of the complex, and it is apparently common in parts of southern Peru.

Specimens examined.--91 males and 2 females, all year.

BOLIVIA. Cochabamba: Incachaca; Yunga del Espiritu Santo; La Paz: Rio Songo, 750 m.; no specific locality: Bolivia. PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba; Puno: Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, Carabaya; Oconeque, Carabaya, 7000 ft.; R. Inambari, 6000 ft.; R. Slucuri, 2500 ft.; Santo Domingo, 6000 ft.; San Gabon, 2500 ft.; Tinguri, 3400 ft.; Uruhuasi, 7000 ft.; not located: Chaupe, 6100 ft. ECUADOR. Loja: Environs de Loja; Tungurahua: Hacienda la Mascota, Rio Topo, 4500 ft.; Huigra, 4000 ft.

Pero supposa Poole, NEW SPECIES

Male (fig. 304).--Forewing almost identical with that of pretensa, but slightly darker; light bands in subterminal area not as strong as in pretensa.

Male genitalia (figs. 736, 736a).--Shapes of juxta, subscaphium, and costal fold will identify this species.

Male eighth sternite (fig. 751).

Female.--Unknown.

Variation.--One male from Canon del Tolima, Tolima, Colombia, is uniform appearing and has the postmedial line more waved than in the type. The size of the discal dot of the forewing above also varies from individual to individual.

Types.--Holotype: Male, Pacho, Cundinamarca, Colombia, 2200 meters, Fassl, in British Museum of Natural History. Paratypes: 2 males from Canon del Tolima, Colombia, in British Museum of Natural History; 2 males from Monte Tolima, Colombia, 2700 m., also in British Museum of Natural History.

Discussion.--There is a single female from Pacho, Colombia, that may be the female of this species, but some slight differences superficially have kept me from including it with supposa.

Specimens examined.--5 males, December and February.

COLOMBIA. Cundinamarca: Pacho, 2200 m.; Tolima: Canon del Tolima, 1700 m.; Monte Tolima, 2700 m.

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Pero denticulata (Butler), NEW COMBINATION

Azelina denticulata Butler, 1881:42.

Male (fig. 305).--Forewing similar to that of pretensa; basal area light brown, flecked with black-brown scales; median area lighter than in pretensa, flecked with black brown toward costa; subterminal area light brown, with two distinct light bands; distinct dark patch usually present between two light bands, also sometimes following middle of postmedial line. Hindwing subterminal area light brown in anal angle and outer half from middle of outer margin to costa. Below light brown, veins sometimes accented with cream color, but otherwise as in pretensa.

Male genitalia (figs. 737, 737a).--Characterized by shapes of subscaphium, aedeagus, and juxta.

Male eighth sternite (fig. 752).

Female.--Unknown.

Variation.--The specimens vary in the intensity of the two light lines in the subterminal area of the forewing above; this does not seem to be geographical but individual variation.

Type.--Butler described denticulata from two males from "Ecuador." The male with Butler's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--I have seen two females from Colombia that are probably the females of this species, but since they are not associated with males, I have not included them. Although this species and pretensa are similar superficially, denticulata is consistently lighter than pretensa and is heavily flecked with black brown particularly in the subterminal area of the forewing above. Pero denticulata is widespread, but has not been taken commonly anywhere.

Specimens examined.--28 males, all year.

BOLIVIA. Cochabamba: Incachaca; Yunga del Espiritu Santo; La Paz: Rio Songo, 750 m. PERU. Huánuco: Pozuzo; Puno: Agualani, 9000 ft.; Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; R. Huacamayo, 3100 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft. ECUADOR. Napo-Pastaza: Baeza; Tungurahua: Rio Topo, 1200 m. COLOMBIA. Antioquia: Frontino; Cauca: Popayan; not located: Santo Antonio, W. Colombia, 5800 ft.; no specific locality: Colombie.

Pero ministrella Poole, NEW SPECIES

Male (fig. 306).--Forewing similar to that of pretensa, but subterminal area strongly striate with black brown; each of two light bands in subterminal area shaded on upper part with black brown.

Male genitalia (figs. 738, 738a, 739, 740).--Shapes of costal fold, subscaphium, and juxta will identify this species.

Male eighth sternite (fig. 753).

Female.--Unknown.

Variation.--The male from Amazonas, Peru, is smaller and lighter than those from Tolima, Colombia, and the base of the basal area is not as heavily striate with black. The specimen from Antioquia, Colombia, is a richer brown than those from Tolima. The costal fold and subscaphium of the male genitalia both show considerable variation, the limits of which are difficult to define because there are so few specimens. This variation is shown in figures 738-740.

Types.--Holotype: Male, Canon del Tolima, 1700 m., Tolima, Colombia, Fassl, December, in British Museum of Natural History. Paratype: 1 male from type locality in U.S. National Museum.

Discussion.--I have not included any specimens from outside the type locality in the type series because of the variation in the male genitalia and the possibility of more than one species. Pero ministrella occurs in the same area as spada, but it is smaller and slightly duller than that species.

Specimens examined.--4 males, December.

PERU. Amazonas: Chachapoyas. COLOMBIA. Antioquia: Mesopotamia, 5000 ft.; Tolima: Canon del Tolima, 1700 m.

Pero cana Poole, NEW SPECIES

Male (fig. 307).--Forewing similar to that of pretensa; antemedial line much more even than in any other species of complex; projections of antemedial line into median area small; subterminal area duller and more heavily striate with black than in pretensa. Below lighter than in pretensa; inner half of subterminal area of both forewing and hindwing darker than outer half, much more so than in pretensa; white blotch in lower half of subterminal area of forewing, not contrasting.

Male genitalia (figs. 741, 741a).--Shapes of juxta and subscaphium characterize this species.

Male eighth sternite (fig. 754).

Female.--Unknown.

Types.--Holotype: Male, La Union, R. Huacamayo, Carabaya, [Puno], Peru, 2000 ft., Nov., G. Ockenden, in British Museum of Natural History. Paratypes: 1 male, Yahuarmayo, [Puno], Peru, 1200 ft., in Cornell University collection; 1 male, Quincemil, Cusco, Peru, 2400 ft., in American Museum of Natural History; 1 male from Rio Songo, [La Paz], Bolivia, 750 m., in U.S. National Museum.

Discussion.--This is the smallest member of the complex. The short projections of the antemedial line of the forewing above are characteristic.

Specimens examined.--4 males, April-May, September, and December.

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BOLIVIA. La Paz: Rio Songo, 750 m. PERU. Cusco: Quincemil, 2400 ft.; Puno: La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft.

Pero spada Poole, NEW SPECIES

Male (fig. 308).--Forewing almost identical with that of pretensa, but slightly larger and more heavily flecked with black brown, particularly subterminal area. Postmedial line of hindwing stronger than in pretensa.

Male genitalia (figs. 742, 742a).--Shape of costal fold is characteristic.

Male eighth sternite (fig. 755).

Female.--Unknown.

Variation.--There is a slight variation in the darkness of the wing as well as in size.

Types.--Holotype: Male, Monte Socorro, 3400-3800 meters, [Tolima], Colombia, in U.S. National Museum. Paratypes: 1 male from type locality in U.S. National Museum; 3 males from Monte Tolima, 3200 m., [Tolima], Colombia, in British Museum of Natural History.

Discussion.--This species may occur with ministrella, but possibly at higher elevations. These two species are similar, but spada is larger and not as heavily striate with dark brown.

Specimens examined.--6 males, January.

COLOMBIA. Tolima: Monte Socorro, 3400-3800 m.; Monte Tolima, 3200 m.; Paso del Quindiu, 3500 m.

Pero ramulata Bastelberger

Pero ramulata Bastelberger, 1908:87.

Male (figs. 309, 310).--Forewing similar to that of pretensa, but larger and lighter; two projections of antemedial line usually not as strongly developed as in pretensa.

Male genitalia (figs. 743, 743a, 744).--Characterized by shapes of costal fold, juxta, and aedeagus.

Male eighth sternite (figs. 756-758).

Female.--Unknown.

Variation.--There is a great deal of geographical variation in ramulata. The population found in Cochabamba, Bolivia, has the median area of the forewing above almost concolorous with the subterminal and basal areas, and the striations in the subterminal area are thicker than in the other populations. The population from Agualani, Peru, is the lightest I have seen. A single male from Uruyacu, Peru, is very heavily striate with black in the subterminal area. In the male genitalia there is variation in both the aedeagus and the thickness of the gnathos (figs. 742-744).

Types.--Bastelberger described ramulata from three males, one from Cushi, Peru, and two males from Huancabamba, Peru. The male from Cushi is designated as the lectotype. I have not seen the type, but it is probably in the Schenkenberg Museum, Frankfurt, Germany.

Discussion.--With the exception of ravida, this is the largest and probably the most geographically variable species in the complex. The description of ramulata fits this species well, and Prout determined specimens in the British Museum of Natural History as this species after having seen the types.

Specimens examined.--33 males, all year.

BOLIVIA. Cochabamba: Incachaca; Yunga del Espiritu Santo; no specific locality: Bolivia. PERU. Huánuco: Cushi, 1900 m.; Junin: Chanchamayo, La Merced; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 6800 ft.; Huancabamba; Puno: Agualani, 9000 ft.; Oconeque; Tinguri; not located: Uruyacu, 5000 ft.

Pero absenta Poole, NEW SPECIES

Male (fig. 311).--Forewing projections of antemedial line much smaller than in pretensa, almost as small as in cama; antemedial line slightly accented with black; discal dot larger than in pretensa; postmedial line more strongly waved than in pretensa; subterminal area with two light bands accented with dark brown above; overall coloration with slight yellow to olive tint.

Male genitalia (figs. 745, 745a).--Shapes of uncus, juxta, and subscaphium characterize species.

Male eighth sternite (fig. 759).

Female.--Unknown.

Variation.--Some specimens are darker than others.

Types.--Holotype: Male, Tinguri, Carabaya, 3400 ft., [Puno], Peru, August 1904, G. Ockenden, in British Museum of Natural History. Paratypes: 7 males from La Oroya, [Puno], Peru, 3000 ft., in British Museum of Natural History; 3 males from San Gabon, [Puno], Peru, in British Museum of Natural History; 2 males from type locality in British Museum of Natural History.

Discussion.--This is one of the more distinctive species of the complex.

Specimens examined.--13 males, all year.

PERU. Puno: La Oroya, R. Inambari, 3000 ft.; San Gabon, 2500 ft.; Tinguri, 3400 ft.

Pero levera Poole, NEW SPECIES

Male (fig 312).--Forewing almost identical with that of pretensa, but slightly duller and not as strongly marked.

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Male genitalia (figs. 746, 746a).--Projection of transtilla is characteristic of this species.

Male eighth sternite (fig. 760).

Female.--Unknown.

Variation.--The Colombian specimens are larger than those from Rancho Grande, Venezuela.

Type.--Holotype: Male, Ob. Rio Negro, 800 m., Vaupés, Colombia, Fassl, in British Museum of Natural History.

Discussion.--The odd process of the transtilla is characteristic of this species.

Specimens examined.--5 males, June and September.

COLOMBIA. Choco: Siato, Rio Siato, 5200 ft.; Vaupés: Ob. Rio Negro, 800 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.

Pero strapa Poole, NEW SPECIES

Male (fig. 313).--Forewing almost identical with that of pretensa, but slightly lighter and more heavily striate with black brown.

Male genitalia (figs. 747, 747a).--Shape of subscaphium and hook at end of aedeagus are both characteristic.

Male eighth sternite (figs. 761, 762).

Female.--Similar to male.

Female genitalia (fig. 1060).

Variation.--Some specimens are slightly darker and more heavily striate with black brown above.

Types.--Holotype: Male, Balzapamba, Bolívar, Ecuador, M. de Mathan, in British Museum of Natural History. Allotype: Female from type locality in British Museum of Natural History. Paratypes: 3 males from type locality in British Museum of Natural History; 1 male from Tingo Maria, Huánuco, Peru, in U.S. National Museum.

Discussion.--This species appears superficially to be a cross between pretensa and denticulata. It is one of the more widespread species in the complex but does not appear to be common.

Specimens examined.--8 males and 1 female, January.

PERU. Huánuco: Tingo Maria. ECUADOR. Bolívar: Balzapamba. COLOMBIA. No specific locality: Colombia. PANAMA. Chiriqui: Chiriqui.

Pero rosota Poole, NEW SPECIES

Male (fig. 314).--Forewing almost identical with that of pretensa, but slightly lighter.

Male genitalia (figs. 748, 748a).--Shape of uncus will identify this species.

Male eighth sternite (fig. 763).

Female.--Similar to male.

Female genitalia (fig. 1061).

Types.--Holotype. Male, Orosi, 1200 m., [Cartago], Costa Rica, Fassl, in British Museum of Natural History. Allotype: Female, Irazu, 6-7000 ft., [Cartago], Costa Rica, in British Museum of Natural History. Paratype: 1 female from type locality in British Museum of Natural History.

Discussion.--This is the only species of the complex known from Costa Rica.

Specimens examined.--1 male and 2 females.

COSTA RICA. Cartago: Orosi, 1200 m.; Irazu, 6-7000 ft.

Pero ravida Warren

Pero ravida Warren, 1905b:376.

Male (fig. 315).--Antennae serrate, shaft cream colored. Legs with femora brown, tibiae and tarsi cream colored. Forewing dark brown; basal area brown, heavily suffused with dark brown, slightly lighter along antemedial line toward costa; median area dark brown, outer third darker than inner two-thirds; discal dot a white vertical line, usually slightly angulate; subterminal area light brown to brown, heavily striate with black brown. Hindwing brown, darker toward base and inner margin; postmedial line a brown line followed by light band; inner half of subterminal area more strongly striate than outer half. Below brown; discal dot of forewing a white band with black line in it; postmedial line of forewing dark; discal dot of hindwing a black spot in white area, divided into quarters; black patch in anal angle.

Male genitalia (figs. 749, 749a).--Shape of subscaphium is characteristic.

Male eighth sternite and tergite (figs. 764, 765).

Female (fig. 316).--Similar to male, but lighter brown.

Female genitalia (fig. 1062).

Type.--Warren described ravida from two males and two females from Limbani, Carabaya, [Puno], Peru. The male with Warren's type label in the British Museum of Natural History is designated as the lectotype.

Discussion.--This is the most distinctive species of the denticulata complex and perhaps should not be included in it.

Specimens examined.--25 males and 5 females, all year.

BOLIVIA. Cochabamba: Incachaca. PERU. Puno: Agualani, Carabaya, 9000 ft.; La Oroya, Carabaya,

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3000 ft.; Limbani, Carabaya, 9500 ft.; Oconeque, 7000 ft.

odonaria Species Complex

This complex consists of four superficially similar species, but they are easily separated by the male and female genitalia. Two species--ogmopoea and caustomeris--occur only in the Andes, but the other two--odonaria and derecha--are more widely distributed throughout tropical America. Although the two latter species are widespread, the distribution of all four is spotty, and only caustomeris appears to be common where found.

Pero odonaria, ogmopoea, and derecha are probably closely related, but caustomeris is more removed. There is little or no sexual dimorphism. A key to males of the four species based on superficial appearance follows. It should apply to females as well.

1. Whiter above; forewing with projection of antemedial line into cell thin and rounded at tip; inner margin of hindwing above conspicuously white: series of diffuse white spots along outer margin of hindwing above ..... caustomeris

   Not as white above; forewing with projection of antemedial line into cell broader and usually truncate; inner margin of hindwing above darker; at most a white line along outer margin of hindwing above 2

2. Postmedial line of hindwing below even ..... ogmopoea

   Postmedial line of hindwing below wavy 3

3. Postmedial line of forewing above curved inward at costa ..... odonaria

   Postmedial line of forewing above meeting costa at right angles ..... derecha

Pero odonaria (Oberthür)

Azelina odonaria Oberthür, 1883:26.

Male (fig. 317).--Legs dull cream colored, spotted with smoky black. Forewing brown to dark brown, depending on age of specimen, lighter toward costa; basal area brown in basal half and pearly gray in outer half along postmedial line; projection of antemedial line into cell followed by black shade, usually truncated; discal dot white; postmedial line incurved at costa, scalloped with white on veins; center of subterminal area with pearly white shade. Hindwing dark gray or brown gray, white toward inner margin; postmedial line white and followed by white shade and line in anal angle; fringe preceded by white line; fringe brown. Below forewing with series of large dull black spots along top half of outer margin; discal dot large and white; hindwing light brown with large, black discal dots subdivided into four parts; postmedial line dull yellow and waved; slightly darker brown shade following postmedial line. Abdomen with hair pencils of male genitalia white and conspicuous when extended.

Male genitalia (figs. 766, 766a).--Characterized by shapes of subscaphium, uncus, and aedeagus.

Male eighth sternite (fig. 766b).

Female.--Similar to male.

Female genitalia (fig. 1063).

Variation.--Individual and geographical variations appear to be slight.

Type.--Described from a single male from "Nouvelle Grenade--Vouyage--de Bogota a Buenaventura--" in British Museum of Natural History.

Discussion.--The species appears to be widespread in Central and South America, but is never common. Although it and derecha are usually distinct because of the incurving of the postmedial line on the costa of the forewing above in this species, in Ecuador the two are similar and the male genitalia must be examined. This can usually be done by brushing away the scales from the end of the male abdomen and looking for the characteristic uncus of derecha.

Specimens examined.--83 males and 9 females, all year.

MEXICO. Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft. COSTA RICA. Cartago: Juan Vinas; Tuis. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Yaracuy: Aroa. BRAZIL. Minas Gerais: Minas Geraes; Paraná: Castro; Parana; Rio de Janeiro: Campo Bello; Itatiaya; Petropolis; Rio Janeiro; Proc. Rio; Teresopolis; Rio Grande do Sul: Guarani; Santa Catarina: Blumenau; Hills between Hansa and Jaragua, 400 m.; Jaragua do Sul; Joinville; Rio Vermelho; São Paulo: Alto da Serra, Santos, 800 m.; Alto da Serra; Sao Paulo; Serra do Mar; S. de Cubotao. PERU. Huánuco: Tingo Maria; Puno: La Union, R. Huacamayo, 2000 ft.; Yahuarmayo, 1200 ft.; not located: Pumayaca. ECUADOR. Bolívar: La Chima, Los Rios; Chimborazo: Chimbo, 1000 ft. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Magdalena: Onca, St. Marta; Valle del Cauca: R. Dagua; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Bogota to Quernavaca; Colombia.

Pero ogmopoea Prout

Pero ogmopoea Prout, 1928:63.

Male (fig. 318).--Similar to odonaria and derecha. Forewing less flecked with dark brown; discal dot less developed and tending to break up into two dots. Hindwing postmedial line more strongly developed than in either odonaria or derecha. Below postmedial line of hindwing even, not waved as in either odonaria or derecha.

Male genitalia (figs. 767, 767a).--Characterized by shapes of subscaphium and aedeagus.

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Male eighth sternite (fig. 767b).

Female.--Similar to male.

Female genitalia (fig. 1064).

Type.--Described by Prout from a single male from La Union, [Puno], Peru, in British Museum of Natural History.

Discussion.--Pero ogmopoea is considerably more rare than either odonaria or derecha, and occurs almost exclusively in the Andes. It can always be easily separated from the other three species in the odonaria complex by the even postmedial line of the lower side of the hindwing.

Specimens examined.--9 males and 3 females, July, November, and December.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. COLOMBIA. Boyacá: Medina, 500 m.; Cundinamarca: Pacho, 2200 m. ECUADOR. Loja: Environs de Loja. PERU. Amazonas: Rentema Falls, Upper Maranon, 1000 ft.; Huánuco: Tingo Maria; Pasco: Oxapampa, 6400 ft.; Puno: La Union, R. Huacamayo, 2000 ft.; S. Domingo, 6500 ft. BOLIVIA. Cochabamba: Incachaca.

Pero derecha Poole, NEW SPECIES

Male (fig. 319).--Forewing similar to that of odonaria, but postmedial line joining costa at right angle, not incurved as in odonaria; coloration yellow brown, not brown, appearing slightly lighter than in odonaria.

Male genitalia (figs. 768, 768a).--Everything about the male genitalia is distinctive.

Male eighth sternite (fig. 768b).

Female.--Similar to male.

Female genitalia (fig. 1065).

Variation.--The specimens from Balzapamba, Bolívar, Ecuador, are considerably darker than the other populations, and they also have the postmedial line of the forewing slightly incurved and could possibly be confused with odonaria.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], Aragua, Venezuela, 1100 m., August 25, 1967, R.W. Poole, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 1 male and 1 female from type locality in each of following collections: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology; 5 males in Universidad Central de Venezuela; 11 males in U.S. National Museum.

Discussion.--This species occurs sympatrically with odonaria in many places. I have seen no specimens from Brazil, and it evidently has followed the Andes in its distribution, although it has managed to move into the northern cordillera of Venezuela. It was common at Rancho Grande, Venezuela, but the specimens available seem to indicate that, although widespread, it is rarely common.

Specimens examined.--58 males and 17 females, all year.

MEXICO. Chiapas: La Granja; Oaxaca: Vista Hermosa, Municipio Comaltepec, 4650 ft.; Veracruz: Jalapa; Misantla; Orizaba. GUATEMALA. Baja Verapaz: Purulha; Quezaltenango: Volcan Santa Maria. COSTA RICA. Cartago: Irazu, 6-7000 ft.; Orosi, 1200 m.; San Jose; Heredia: Mount Poas; Puntarenas: Monteverde, 4600 ft. PANAMA. Chiriqui: Volcan de Chiriqui. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. COLOMBIA. Vaupés: Ob. Rio Negro, 800 m. ECUADOR. Bolívar: Balzapamba; Chimborazo: Dos Puentes, 1700 ft.; no specific locality: Ecuador. PERU. Huánuco: Tingo Maria; Junin: Chanchamayo; Puno: Agualani, 9000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6500 ft. BOLIVIA. La Paz: Rio Songo, 750 m.; Yungas de la Paz.

Pero caustomeris Prout

Pero caustomeris Prout, 1928:62.

Male (fig. 320).--Forewing larger, with greater amount of white than in other three members of complex; projection of antemedial line into cell narrower, with black projecting considerably beyond tip; postmedial line meeting costa at right angle; white shade in subterminal area large and conspicuous. Hindwing dull gray brown with much white, particularly along inner margin, in upper half of outer margin, and in anal angle; white scaling along outer margin in form of series of obscure white blotches; postmedial line white and well defined. Below dark spots of terminal area of forewing poorly defined; hindwing brown, heavily striate with yellow and with conspicuous white shade in anal angle.

Male genitalia (figs. 769, 769a).--Characterized by spatulate uncus.

Male eighth sternite (fig. 769b).

Female.--Similar to male.

Female genitalia (fig. 1066).

Variation.--The Colombian specimens, particularly from northern Colombia, are darker than the Peruvian ones, and are sometimes easily confused with odonaria from these areas. However, the wide subterminal band of the forewing above in caustomeris will almost always identify it.

Type.--Prout described caustomeris from a series of males from La Oroya, [Puno], Peru. The male with Prout's type label in the British Museum of Natural History is designated as the lectotype.

Discussion.--Pero caustomeris is found in the Andes and, although spottily distributed, is probably common where found.

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Specimens examined.--141 males and 2 females, all year.

COLOMBIA. Antioquia: El Cerro, Frontino, 6000 ft.; Frontino; Cundinamarca: Pacho, 2200 m.; Tolima: Canon del Tolima, 2700 m.; Monte Tolima, 3200 m.; Monte Tolima; Paso del Quindiu, 3500 m.; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Colombia. ECUADOR. Tungurahua: La Victoria, Rio Pastaza, 3500 ft. PERU. Cusco: Caradoc, Marcapata, 4000 ft.; Coosnipata, Paucartambo; Huánuco: Cushi, 1900 m.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Chirimayo, 1000 ft.; Chaquimayo, 25-3000 ft.; La Oroya, 3100 ft.; Oconeque, 7000 ft.; Rio Huacamayo, 3100 ft.; R. Inambari, 6000 ft.; R. Slucuri, 2500 ft.; San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.; Yahuarmayo, 1200 ft.; not located: Chaupe, 6100 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; Yunga del Espiritu Santo; La Paz: Corvico [Coroico?], 1800 m.; Rio Songo, 750 m.; no specific locality: Bolivia.

GROUP 11

This group contains only one species, but the ostium of the female genitalia is so distinctive I have considered the species of group status. The male genitalia, although similar to genitalia of the following first few groups, are distinct from all of them. The spiny costa, the shape of the subscaphium, the vesica of the aedeagus, and the shape of the juxta are all distinctive.

Pero lindigi (Felder and Rogenhofer), NEW COMBINATION

Azelina lindigi Felder and Rogenhofer, 1873: pl. 123, fig. 20.
Azelina indistincta Warren, 1900:210. NEW SYNONYMY.
Pero curvistigma Dognin, 1912:151. NEW SYNONYMY.

Male (fig. 321).--Palpi dark brown. Legs dark brown, tips of tibiae cream colored. Forewing almost unicolorous, median area not darker than either basal or subterminal areas; top of basal area along subterminal line slightly lighter; discal dot an angulate white line; median area often with orangish to yellowish patch in angulation between radial and median veins, sometimes also between Cu_2 and 2A; darker brown line preceding postmedial line in median area; subterminal area almost uniform, but with one or two slightly darker bands; vague series of dots along outer margin. Hindwing brown with dark postmedial line, otherwise uniform. Below brown with slightly purplish tint; discal dot of hindwing black; postmedial line of hindwing shaded with cream color toward anal angle.

Male genitalia (figs. 770, 770a).--Everything about genitalia is characteristic.

Female (fig. 322).--Forewing lighter brown than in male; veins of forewing clearly outlined in dark brown; yellowish patch along postmedial line missing; subterminal area striate with many fine brown lines. Below lighter than in male.

Female genitalia (fig. 1067).--Peculiar thumblike structure at opening of ostium is characteristic.

Variation.--The intensity of the yellow patch preceding the postmedial line of the forewing is variable within a population and varies from strongly developed to almost absent. Specimens from the Andes are larger, and the patch of the forewing is more yellow and more prominent than in specimens from Central America or Venezuela.

Types.--Pero lindigi was described from a single male (not female as in the description) from Bogotá. Warren described indistincta from two males and a female from Popayán, Colombia, and the male with his type label is designated as the lectotype. Both of these types are in the British Museum of Natural History. Dognin described curvistigma from a single female from "Rio Toche, Quindin, Colombie," in U.S. National Museum.

Discussion.--Pero lindigi probably occurs at high altitudes.

Specimens examined.--87 males and 12 females, all year.

COSTA RICA. Cartago: Juan Vinas; Irazu, 6-7000 ft.; Orosi, 1200 m.; Tuis, 5800 ft. PANAMA. Chiriqui: Chiriqui. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Cauca: Popayan; Torne; Choco: Siato, Rio Siato, Slopes of Choco, 5200 ft.; Cundinamarca: Bogota; Finca San Pablo, 3 km. N. Alban, 1800 m.; Pacho, 2200 m.; Tolima: Rio Toche, Quindin, 2400 m.; Vaupés: Ob. Rio Negro, 800 m.; not located: Sierra de Libane, 6000 ft.; no specific locality: Colombie. ECUADOR. Bolívar: Balzapamba; Chimborazo: Pallatanga, 4400 ft.; not located: Hacienda Cayandeled, Rio Bamba, 4200 ft.; Napo-Pastaza: Baeza. PERU. Amazonas: Rio Tabaconas, 6000 ft.; Huánuco: Cushi, 1900 m.; Pozuzo, 800-1000 m.; Junin: Chanchamayo; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6000 ft.; Oxapampa, 6400 ft.; Piura: Huancabamba; Puno: Oconeque, 7000 ft.; Santo Domingo, 6000 ft.; Uruhuasi, 7000 ft.; San Martin: Huallaga; no specific locality: Peru. BOLIVIA. La Paz: Corvico [Coroico?], 1800 m.; no specific locality: Bolivia.

GROUP 12

The species of group 12 are characterized by the structure of the valve of the male genitalia (fig. 771), particularly the basal position of the median process. The juxta, subscaphium, and eighth sternite of the male abdomen are often modified. The ostium of the female genitalia usually has some kind of inner lip and is often covered by a flap of the sternite below it.

The species in group 12 are almost all found in the Andes, although there are a few exceptions.

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Pero parambensis Dognin

Pero parambensis Dognin, 1907:22.

Male (fig. 323).—Palpi brown, outer edge and tip of third palpal segment light cream colored. Legs light cream colored, contrasting with body. Forewing basal area brown, heavily overlain with dark gray scales, appearing dark gray; antemedial line shaded with black; median area dark gray; brownish streak in cell from discal dot to antemedial line; discal dot white, sometimes with black dot in it; median area black along postmedial line, black widest near inner margin, but narrowing strongly toward costa; subterminal area yellow brown, variegated with dark and light areas; apex concolorous with median area; series of black dots along outer margin. Hindwing dark black gray; yellow-brown band in anal angle along postmedial line; series of black dots along outer margin. Below black gray; white blotch in lower half of forewing; upper half of forewing with red-brown blotch; discal dot white; postmedial line of hindwing white and highly waved, contrasting in anal angle, but otherwise diffuse; entire hindwing speckled with white.

Male genitalia (figs. 771, 771a).--Shape of subscaphium is characteristic.

Male eighth sternite (fig. 784).

Female (fig. 324).--Maculation as in male, but more uniform brown, not black; median area of forewing above darker than either basal or subterminal areas.

Female genitalia (fig. 1068).

Variation.--This is a variable species geographically. The description was based on specimens from Colombia and Ecuador. Males from Costa Rica are much more uniform than those from Colombia, and the subterminal area of the forewing above in these Costa Rican specimens is light yellow brown. The black preceding the postmedial line of the forewing is less evident in the specimens from Costa Rica than in those from Colombia. A male from Panama is similar to the Colombian specimens but lacks the yellow of the subterminal area. A male from Jalapa, Mexico, is almost uniformly dark brown without either the black of the Colombian specimens or the yellow subterminal area in specimens from Costa Rica. The basal area of the forewing above in the specimens from Brazil is conspicuously lighter than the median area, and the apex of the wing is not noticeably lighter than the remainder of the subterminal area. The males and females are very similar in the Brazilian populations and do not show the dimorphism characteristic of the species in other localities.

Type.--Dognin described this species from two males and one female. The male bearing Dognin's type label and U.S.N.M. type number 32385 is designated as lectotype.

Discussion.--This species is rather widely distributed in tropical America, but the scattered specimens indicate that it is never common. Pero parambensis has been collected mostly in montane forest.

Specimens examined.--59 males and 16 females, March-October.

MEXICO. Veracruz: Jalapa. COSTA RICA. Cartago: Cachi; Juan Vinas; Tuis, 2400 ft.; Tuis; not located: Careblanco de Sarapiqui. PANAMA. Chiriqui: Chiriqui; not located: Lino, 800 m. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m. BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Petropolis; Rio de Janeiro; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Nova Bremen, 250 m.; Rio Vermelho, 850 m.; Joinville. BOLIVIA. Cochabamba: Incachaca. PERU. Junin: Chanchamayo; La Merced, Chanchamayo; Puno: San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Yahuarmayo, 1200 ft. ECUADOR. Bolívar: Balzapamba; Chimborazo: Chimbo; Imbabura: Lita, 3000 ft.; Paramba, 1050 m.; Paramba, 3500 ft.; Pichincha: Santo Domingo de los Colorados; Zamora: Zamora; no specific locality: Ecuador. COLOMBIA. Boyacá: Muzo, 400-800 m.; Muzo; Medina, 500 m.; Cauca: Juntas; Choco: Juntas, Rio Tamaua, Rio San Juan, 400 ft.; Valpariso, 4500 ft.; Cundinamarca: Bogota; Valle del Cauca: Rio Dagua; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Colombia.

tabitha Species Complex

This complex consists of five species, one common and widespread and four rare and local. It includes tabitha through xylonaria. The male is not known for kaybina, and females are lacking for curvifera and xylonaria. Although the male of kaybina is not known, the discal dot of the forewing below in the female is very characteristic and is probably also found in the male. A key to the males based on superficial appearance follows.

1. Costa of forewing above blue gray; subterminal area yellow, heavily covered with brown striations; known only from department of Amazonas, Peru ..... xylonaria

   Costa of forewing above not blue gray; subterminal area not yellow, covered with brown striations 2

2. Discal dot of hindwing a conspicuous white spot circled with black; known only from Costa Rica ..... kaybina

   Discal dot of hindwing below not as above, usually a white spot with black dot in center, not circled with black 3

3. Postmedial line of forewing above below cell perpendicular to inner margin; subterminal area of forewing strongly variegated; known only from northern Venezuela ..... guacamaya

   Postmedial line of forewing above below cell incurved to inner margin; subterminal area of forewing above not strongly variegated 4

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4. Wings below uniform violet brown, almost no white scaling present; subterminal area of forewing below without white patch in lower half; forewing above very soft and uniform, particularly subterminal area ..... curvifera

Wings below not uniform violet brown, heavily scaled with white; subterminal area of forewing below with dull white patch in lower half; forewing above not soft and uniform ..... tabitha

Pero tabitha (Maassen), NEW COMBINATION

Azelina tabitha Maassen, 1890:157.
Azelina rogenhoferi Druce, 1892:60. NEW SYNONYMY.

Male (fig. 325).--Palpi brown, outer fringe and tip of third segment cream colored. Legs cream colored. Forewing brown to violet brown; basal area light brown, but appearing dull, dark violet to violet black because of overlay of dark scales; antemedial line followed by black; median area dark, violet black to black, contrasting with subterminal area, darker along postmedial line and antemedial line, lightest between discal dot and antemedial line; discal dot white, usually with black central dot; subterminal area light brown, slightly patterned with dark brown; apex of wing darker than remainder of subterminal area, concolorous with median area. Hindwing gray black; postmedial line vague; light yellow-brown patch in anal angle. Below mostly brown, but with violet-black tint; top half of subterminal area of forewing with light brown patch, lower half with dull white blotch; cream-colored patch in anal angle of hindwing, extending about half way up postmedial line as thin cream-colored line.

Male genitalia (figs. 772, 772a, 773-777).--Shapes of subscaphium and aedeagus are characteristic, although both are variable.

Male eighth sternite (fig. 785).

Female (fig. 326).

Female genitalia (fig. 1069).

Variation.--Populations from Ecuador, Colombia, and Venezuela are darker and usually smaller than those from Peru and Bolivia. The postmedial line of the forewing in these northern populations also tends to meet the inner margin at right angles. The single female from Orosi, Cartago, Costa Rica, is the largest and lightest specimen I have seen. The subscaphium and aedeagus of the male genitalia are both variable from locality to locality, and some of this variation is shown in figures 773-777.

Types.--Azelina tabitha was based on a single male from San Florencio, Ecuador. I have not seen the type, but the figure is clearly this species. The type of rogenhoferi is a male and is a specimen figured as saturata by Felder and Rogenhofer in the "Reise Novara." This specimen is in the British Museum of Natural History.

Discussion.--This is the most common species of the tabitha complex. Much geographic variation is found in the male genitalia. The wide distribution of tabitha is in contrast to that of other members of the complex.

Specimens examined.--113 males and 21 females, all year.

COSTA RICA. Cartago: Orosi, 1200 m. PANAMA. Chiriqui: Chiriqui. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Mérida: Merida. COLOMBIA. Boyacá: Muzo, 400-800 m.; Cauca: Popayan; Valle del Cauca: Narangito, Rio Dagua, 3900 ft.; Vaupés: Ob. Rio Negro, 800 m.; not located: San Antonio, 5800 ft.; no specific locality: Colombie. ECUADOR. Bolívar: Balzapamba; Imbabura: Paramba; Loja: Environs de Loja; Napo-Pastaza: Baeza; Pichincha: Mindo; Tungurahua: El Rosario, Rio Pastaza, 4900 ft.; La Victoria, Rio Pastaza, 3500 ft.; not located: Oriente; Rio Pescado. PERU. Amazonas: Rio Tabaconas, 6000 ft.; Cusco: Caradoc, Maracapata, 4000 ft.; Marcapata, 4500 ft.; Huánuco: Cushi, 1830 m.; Pozuzo; Tingo Maria; Junin: Chanchamayo, La Merced; Pasco: Huancabamba, Cerro de Pasco; Puno: Agualani, 9000 ft.; La Oroya, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6500 ft.; Santo Domingo, 6000 ft.; Santo Domingo; Tinguri, 3400 ft.; Yahuarmayo, 1200 ft. BOLIVIA. Cochabamba: Chimate, 760 m.; Incachacc; Yungas del Palmar, 2000 m.; La Paz: Rio Songo, 750 m.; no specific locality: Bolivia.

Pero guacamaya Poole, NEW SPECIES

Male (fig. 327).--Similar to tabitha, but duller, with slight purple tint. Forewing basal area steel gray, lighter than median area; antemedial line vaguely outlined with white; discal dot white, round, with central black spot; postmedial line below cell perpendicular to inner margin, not incurved; postmedial line followed by light, dark, and then light band in subterminal area. Below brown patch in subterminal area of forewing red brown, not light brown; cream-colored patch in anal angle of hindwing poorly developed or absent.

Male genitalia (figs. 778, 778a).--Shape of subscaphium will separate guacamaya from tabitha.

Male eighth sternite (fig. 786).

Female (fig. 328).--Maculation as in male, but brown to red brown, usually darker than in female of tabitha. Forewing postmedial line below cell perpendicular to inner margin, not incurved as in tabitha. Below hindwing only weakly flecked with white (but variable).

Female genitalia (fig. 1070).

Variation.--The males of guacamaya are not variable, but the females vary both in size and color. Some of the females are purple brown, but others are tan and difficult to separate from females of tabitha. These tan specimens also have the hindwing below more heavily flecked with white scales than do the purple-brown females.

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Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, August 13, 1967, R.W. Poole, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 1 male and 1 female from type locality in each of following collections: American Museum of Natural History, British Museum of Natural History, Cornell University, Museum of Comparative Zoology, and Universidad Central de Venezuela; 2 males and 4 females in U.S. National Museum.

Discussion.--This species is known only from the type locality where both it and tabitha occurred. Neither of them was common.

Specimens examined.--8 males and 10 females, June-August.

VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.

Pero curvifera Dognin

Pero curvifera Dognin, 1913a:414.

Male (fig. 329).--Similar to tabitha. Forewing with outward bulge of postmedial line between Cu_2 and 2A poorly developed or absent; lower half of subterminal area soft, uniform brown; any variegations of subterminal area subtle and subdued. Below light brown patch in upper half of subterminal area of forewing and white blotch in lower almost absent; wings uniform violet brown, dark, and lacking almost all white scaling.

Male genitalia (figs. 779, 779a).--Easily identified by shapes of subscaphium and aedeagus.

Male eighth sternite (fig. 787).

Female.--Unknown.

Type.--Described from a male from Huallaga, Loreto, Peru, in U.S. National Museum.

Discussion.--The soft brown subterminal area of the forewing above and the uniform dark violet-brown underside will distinguish this species from tabitha. This species is similar to tabitha, but the male genitalia, particularly the aedeagus, and the eighth sternite of the male are distinctive.

Specimens examined.--5 males, January and February.

PERU. Huánuco: Cushi, 1900 m.; Junin: Chanchamayo; Loreto: Huallaga; not located: Chaupe, 6100 ft.

Pero kaybina Poole, NEW SPECIES

Female (fig. 330).--Forewing antemedial line heavy, black, very conspicuous; outer one-fourth of median area not darker than inner three-fourths; only suggestion of black shade along outer edge of median area; postmedial line black, distinct, not incurved to inner margin; subterminal area strongly variegated as in guacamaya. Below inner half of forewing dull white, much more so than in either guacamaya or tabitha; hindwing strongly marked with white; discal dot a round white spot circled with black ring.

Female genitalia (fig. 1071).

Male.--Unknown.

Types.--Holotype: Female, Juan Vinas, [Cartago], Costa Rica, November, Schaus and Barnes, in U.S. National Museum. Paratypes: 1 female from Cartago, Costa Rica, in U.S. National Museum and 2 females from Orosi, [Cartago], Costa Rica, in British Museum of Natural History.

Discussion.--The white discal dot circled with black of the hindwing below is distinctive.

Specimens examined.--4 females, November.

COSTA RICA. Cartago: Cartago; Juan Vinas; Orosi, 1200 m.

Pero xylonaria (Oberthür)

Azelina xylonaria Oberthür, 1883:24.

Male (fig. 331).--Forewing basal area brown, heavily overlain with gray-violet scales; antemedial line followed by dark brown shade; median area brown, striate with dark brown; dark brown line paralleling postmedial line two-thirds way to costa; costa blue gray; discal dot cream colored; subterminal area yellow brown, lightest along postmedial line, heavily striate with dark brown; apex of wing dull black; series of black dots along outer margin, dots white in dark area around apex. Hindwing dull black; postmedial line present but vague; patch in anal angle smaller than in tabitha. Below similar to tabitha.

Male genitalia (figs. 780, 780a).--Shapes of subscaphium and juxta are characteristic.

Male eighth sternite (fig. 788).

Female.--Unknown.

Type.--Oberthür described xylonaria from an unknown number of specimens from Huambo, Amazonas, Peru. However, a specimen collected on February 27, 1880, is stated to be the type and is figured by Oberthür. A specimen matching this description is in the British Museum of Natural History and bears Oberthür's type label.

Discussion.--The blue-gray costa and the yellow subterminal area with rusty-brown striations make this an easily identified species. It is known only from the type locality and it was evidently common there. The specimens labeled only "Peru" were also collected by Mathan and probably came from Huambo.

Specimens examined.--67 males, April.

PERU. Amazonas: Huambo; no specific locality: Peru.

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Pero trena (Dognin)

Azelina trena Dognin, 1895:108.
Azelina munycharia Oberthür, 1912:297.

Male (fig. 332).--Palpi black, outer edge and apex of third segment cream colored. Legs cream colored, slightly speckled with black. Thorax black with few cream-colored speckles. Forewing black on yellow brown; basal area light brown to cream colored, but heavily overlain with gray black; bottom of basal area along inner margin slightly darker; median area black, darker along postmedial line; discal dot large, cream colored; veins in median area marked with small olive-brown blotches; subterminal area yellow brown; light line in lower half of subterminal area paralleling postmedial line; apex of wing gray black. Hindwing gray black; obscure black postmedial line followed by vague lighter shade; anal angle with yellow-brown patch; series of large black dots along outer margin, particularly strong in anal angle. Below gray black; discal dots of forewing and hindwing large and cream colored; discal dot of hindwing with black crescent in it; top half of subterminal area of forewing with brownish patch; whitish blotch in lower half of subterminal area; postmedial line of hindwing waved and defined with cream color; large cream-colored patch in anal angle followed by black band; inner margin of hindwing speckled with cream-colored scales and black.

Male genitalia (figs. 781, 781a).--Subscaphium is characteristic.

Male eighth tergite and sternite (figs. 789, 790).

Female (fig. 333).--Similar to male, but whiter and duller.

Female genitalia (fig. 1072).

Variation.--Specimens from Ecuador and Colombia are whiter and not as brightly colored as ones from Peru and Bolivia.

Types.--Dognin described trena from "three males and one female, Loja—Ambato." The female listed is actually a male, but only three males and not four are in the U.S. National Museum. The specimen with U.S.N.M. type number 32384 is designated as the lectotype. Azelina munycharia was based on a single specimen from "Huancabamba, Peru," and this type is in the British Museum of Natural History.

Discussion.--This species is distinctive and cannot be confused with any other species in Pero. Most specimens of trena are from Peru.

Specimens examined.--85 males and 8 females, all year.

COLOMBIA. Antioquia: Frontina; no specific locality: Colombie. ECUADOR. Loja: Environs de Loja; Tungurahua: Ambato; El Topo, Rio Pastaza, 4200 ft.; Zamora: Zamora, 3-4000 ft. PERU. Amazonas: Chachapoyas; Huallaga; Cusco: Caradoc, Marcapata, 4000 ft.; Huánuco: Cushi, 1900 m.; Pozuzo; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6000 ft.; Oxapampa, 6400 ft.; Oxapampa, 2000 m.; Puno: Chirimayo, 1000 ft.; Chaquimayo, 2500-3000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; Oconeque, 7000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Santo Domingo; Yahuarmayo, 1200 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; La Paz: Corvico [Coroico?], 1800 ft.; Rio Songo, 750 m.; no specific locality: Bolivia.

Pero alboculata Dognin

Pero alboculata Dognin, 1907:21.

Male (fig. 334).--Similar to parambensis, but brown without black or gray tints. Forewing with shaded area preceding postmedial line brown, not black, extending farther toward costa than in parambensis. Hindwing postmedial line better defined than in parambensis.

Male genitalia (figs. 782, 782a).--Shapes of subscaphium and aedeagus are characteristic.

Male eighth sternite (fig. 791).

Female.--Similar to male.

Female genitalia (fig. 1073).

Variation.--Some specimens of alboculata are darker than others.

Type.--Dognin described alboculata from "a series of males." The specimen from Santo Domingo, Carabaya, Peru, with Dognin's type label is designated as the lectotype. It is in the U.S. National Museum.

Discussion.--Pero alboculata is commonest in Peru. It is most similar to parambensis, but is brown, not gray or black.

Specimens examined.--103 males and 5 females, all year.

COLOMBIA. Antioquia: Mesopotamia, 5000 ft. ECUADOR. Loja: El Monje pres Loja; Zamora: Palanda. PERU. Cusco: Caradoc, Marcapata, 4000 ft.; Junin: Chanchamayo; La Merced, 3000-4500 ft.; Puno: Chaquimayo, 2500-3000 ft.; La Oroya, R. Inambari, 3100 ft.; La Union, Rio Huacamayo; La Union, 2000 ft.; Quinton, 5000 ft.; R. Inambari; San Gabon, 1200 ft.; Santo Domingo, 6000-6500 ft.; Santo Domingo; Yahuarmayo, 1200 ft.; Tinguri, 3400 ft.; Tinguri; no specific locality: Peru. BOLIVIA. La Paz: Corvico [Coroico?], 1800 m.; Yungas de la Paz, 1000 m.

inferna Species Complex

I have not been able to construct a key to the following complex of four species based on external characters, although there are small differences in appearance among them. All four species seem to be allopatric, although both inferna and alaga occur in the State of Puno in Peru. In Puno, inferna is found at higher elevations (7-9,000 ft) and alaga at lower altitudes (6-7,000 ft).

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Pero refna Poole, NEW SPECIES

Male (fig. 335).--Palpi black, outer edge cream colored. Legs cream colored speckled with black, particularly forefemora. Forewing black on yellow brown; basal area gray black, speckled toward costa with cream color; antemedial line followed by fine black shade, thickest toward costa; discal dot large, circular, and cream colored; median area darkest along postmedial line, thinning out toward costa; subterminal area with vague darker band paralleling postmedial line, particularly toward middle in inward bend of postmedial line; apex of wing gray black. Hindwing gray black; postmedial line vague to absent; anal angle with small yellow-brown patch, sometimes with rusty appearance. Below gray black; discal dots of forewing and hindwing white; discal dot of hindwing with black crescent in it; top half of subterminal area of forewing with rusty-brown patch, lower half with white one; postmedial line of hindwing waved, slightly marked with cream color; patch in anal angle of hindwing small; postmedial line black, contrasting in anal angle.

Male genitalia (figs. 783, 783a).--Shape of subscaphium is characteristic.

Male eighth sternite (fig. 792).

Female (fig. 336).--Forewing maculation as in male, but brown with slightly purple tint; basal and median areas brown; subterminal area yellow brown as in male.

Female genitalia (fig. 1074).

Variation.--Little, if any.

Types.--Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 7 males and 2 females from type locality in U.S. National Museum.

Discussion.--This is the lightest colored of the four species in the complex.

Specimens examined.--8 males and 3 females.

BOLIVIA. Cochabamba: Incachaca.

Pero alaga Poole, NEW SPECIES

Male (fig. 337).--Forewing similar to that of refna; subterminal area slightly darker. Below white patch in subterminal area of forewing small and poorly developed, occupying only about one-fifth of subterminal area; wings in general darker than in refna.

Male genitalia (figs. 796, 796a).--Subscaphium is characteristic.

Male eighth sternite (fig. 793).

Female (fig. 338).--Identical to preceding species.

Female genitalia (fig. 1075).

Types.--Holotype: Male, Oconeque, Carabaya, Peru, 7000 ft., July 1904, Ockenden, in British Museum of Natural History. Allotypes: Female from type locality in British Museum of Natural History; 1 female from R. Inambari, Peru, in British Museum of Natural History; 2 males and 3 females from Santo Domingo, Peru, in British Museum of Natural History; 1 male from Huallaga, Peru, in U.S. National Museum; 1 male from Huancabamba, 5-6000 ft., Peru, in British Museum of Natural History; 1 male from Oxapampa, 6400 ft., Peru, in British Museum of Natural History; 3 males from Huancabamba, Nord du Perou, in U.S. National Museum.

Discussion.--This species and inferna both occur in the State of Puno, Peru, but alaga comes from elevations between 6,000 and 7,000 feet and inferna from 7,000 to 9,000 feet. The subterminal area of the forewing above in alaga is more mottled than in inferna.

Specimens examined.--11 males and 5 females, March, October, and November.

PERU. Amazonas: Huallaga; Pasco: Huancabamba, 5-6000 ft.; Oxapampa, 6400 ft.; Piura: Huancabamba; Puno: Oconeque, 7000 ft.; R. Inambari, 6000 ft.; Santo Domingo, 6500 ft.

Pero inferna Warren

Pero inferna Warren, 1907:319.

Male (fig. 339).--Almost identical to preceding two species. Forewing subterminal area even, not heavily mottled as in alaga and refna; discal dot not as contrasting as in either two preceding species.

Male genitalia (figs. 797, 797a).--Characterized by shape of subscaphium.

Male eighth sternite (fig. 794).

Female (fig. 340).--Almost identical to female of alaga, but slightly darker.

Female genitalia (fig. 1076).

Type.--Warren described inferna from a single male from Limbani, Carabaya, Peru, 9,500 feet altitude. This specimen is in the British Museum of Natural History.

Discussion.--This and the preceding species both occur in southern Peru, but based on available specimens inferna occurs at altitudes between 7,000 and 10,000 feet and alaga from 6,000 to 7,000 feet. The subterminal area of the forewing above in inferna is much more uniform than in alaga.

Specimens examined.--5 males and 1 female, March and April.

PERU. Puno: Agualani, 9000 ft.; Limbani, 9500 ft.; Uruhuasi, 7000 ft.

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Pero dunca Poole, NEW SPECIES

Male (fig. 341).--Forewing antemedial line pointing inward on inner margin; postmedial line almost straight toward costa; subterminal area striate with black lines; apex of wing black, not clearly set off from remainder of subterminal area. Below postmedial line of hindwing better defined with cream-colored scales than in any other species of this complex.

Male genitalia (figs. 798, 798a).--Subscaphium is characteristic.

Male eighth sternite (fig. 795).

Female.--Unknown.

Variation.--One of the two known specimens of dunca is rusty colored and is intermediate between the typical coloration of the males and females of the other three species of the complex.

Types.--Holotype: Male, Monte Tolima, [Tolima], 3200 m., Colombia, Fassl, in U.S. National Museum. Paratype: 1 male from Mesopotamia, Antioquia, Colombia, 5000 ft., in American Museum of Natural History.

Discussion.--The straight postmedial line toward the costa of the forewing above is characteristic of dunca. The rusty coloration of one of the two males has not been found in any of the other three species of the complex, and it resembles the female coloration of the other three species.

Specimens examined.--2 males.

COLOMBIA. Antioquia: Mesopotamia, 5000 ft.; Tolima: Monte Tolima, 3200 m.

GROUP 13

Group 13 is a heterogeneous group intermediate between groups 12 and 14. There is usually a cluster of long spines in the vesica of the aedeagus of the male genitalia. All species of group 13 have a similar appearance.

Pero caerula Poole, NEW SPECIES

Azelina asterodia (in part) Druce, 1892:62.

Male (fig. 342).--Palpi blue green, outer fringe cream colored. Legs cream colored, spotted with black. Forewing green, heavily clouded with blue; basal area blue, center dark green; median area green with central blue patches; discal dot an angulate white line; postmedial line marked with white points where veins cross; subterminal area generally blue green, blue from costa along postmedial line to near R_4, and from there a wide yellowish band heavily spotted with brown and often dark purple to inner margin; outer half of subterminal area blue to blue green, greener toward costa, and outer angle; series of white and black dots along outer margin. Hindwing dull gray green; postmedial line dull cream color or almost absent; rusty-red patch outlined with cream color along outer side of postmedial line in anal angle. Below blue gray; yellowish patch following postmedial line of forewing between R_5 and M_2; costa yellowish; hindwing flecked with yellow along inner margin and in anal angle; conspicuous series of white spots along outer margin.

Male genitalia (figs. 799, 799a).--Distinguished from next species by shapes of aedeagus, juxta, and costal projection of valve.

Female.--Similar to male.

Female genitalia (fig. 1077).

Variation.--There is some variation in the intensity of the light yellow band following the postmedial line of the forewing above. In some instances, where yellow is poorly developed, this band is violet.

Types.--Holotype: Male, Cerro Pelon, Municipio Yolox, Oaxaca, Mexico, 7052 feet, September 17, 1962, E.C. Welling, in American Museum of Natural History. Allotype: Female from type locality in American Museum of Natural History. Paratypes: 5 males and 1 female from type locality in American Museum of Natural History.

Discussion.--The blue-green wings will distinguish caerula from verda, which is almost completely green and lacks patches of blue.

Specimens examined.--8 males and 2 females, September and October.

MEXICO. Oaxaca: Cerro Pelon, Municipio Yolox, 7052 ft.; Vista Hermosa. GUATEMALA. Totonicapán: Totonicapan, 8500-10,000 ft.

Pero verda Poole, NEW SPECIES

Male (fig. 343).--Forewing similar to that of preceding species, but green without patches of blue; basal area green, scaled with darker green; discal dot smaller than in caerula; band following postmedial line as in caerula, but orangish, not yellowish, and not as conspicuous. Hindwing green gray, without bluish cast; band in anal angle slightly wider. Below darker, greener than in caerula, but maculation similar.

Male genitalia (figs. 800, 800a).--Shapes of aedeagus, juxta, and costal projection of valve will distinguish this species from caerula.

Female.--Unknown.

Variation.--In specimens from El Salvador the basal area and the band following the postmedial line of the forewing are very dark violet. The type is not like this.

Types.--Holotype: Male, Lagos del Montebello, 25 mi. E. El Trinitaria, 5000 ft., Chiapas, Mexico, Emmel and Breedlove, August 12-22, 1966, in U.S. National Museum. Paratype: 1 male from type locality in U.S. National Museum.

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Specimens examined.--8 males, July and August.

MEXICO. Chiapas: Lagos del Montebello, 25 mi. E. El Trinitaria. 5000 ft. EL SALVADOR. Cerro Verde. HONDURAS. Rosario, San Jacinto Mtns., 5900 ft.

Pero heralda Poole, NEW SPECIES

Male (fig. 344).--Palpi dull brown, outer edge white. Legs with femora gray brown; tibiae and tarsi cream colored. Forewing light brown and brown; basal area light brown, but covered by dull gray brown; median area brown with violet tint; outer fourth of median area darker than inner three-fourths; discal dot a broad white line with thin, small, central black line; postmedial line followed by thin light band; subterminal area light brown striate with fine black-brown lines, but not as a definite pattern; series of dots along outer margin. Hindwing dull brown; postmedial line brown, followed by thin light band; anal angle slightly lighter than remainder of wing; uppermost white dot along outer margin strongly developed. Below slate gray; maculation cream colored; yellow tan patch in upper half of subterminal area of forewing along postmedial line; lower half of subterminal area only vaguely dull white; discal dot as above; postmedial line fine, dark edged with cream color; discal dot of hindwing black, divided into four quarters; anal angle cream colored along postmedial line; very strong white dot on outer margin toward costa.

Male genitalia (figs. 801, 801a).--Characterized by aedeagus and subscaphium.

Female.--Similar to male, but darker.

Female genitalia (fig. 1078).

Types.--Holotype: Male, Orosi, [Cartago], Costa Rica, 1200 meters, Fassl, in British Museum of Natural History. Allotype: Female from type locality, also in British Museum of Natural History. Paratypes: 2 males and 1 female from type locality in British Museum of Natural History.

Discussion.--Pero heralda resembles a small specimen of kayei and is probably related to it.

Specimens examined.--3 males and 2 females.

COSTA RICA. Cartago: Orosi, 1200 m.

Pero kayei Prout

Pero kayei Prout, 1928:60.

Male (fig. 345).--Legs light brown, speckled with darker scales. Forewing basal area light brown, heavily scaled with darker brown, particularly toward base, and striate with blue-gray lines, particularly toward antemedial line and inner margin; median area brown with outer fourth darker than inner three-fourths; inner two-thirds striate with blue-gray lines; discal dot a small angulate white line; postmedial line a fine white band; subterminal area light brown, striate with darker brown lines, particularly in band following postmedial line; apex tending to be darker than remainder of subterminal area; series of vague white or black dots along outer margin. Hindwing gray brown, with cream-colored postmedial line; anal angle yellow. Below purple brown; inner half of subterminal area of forewing browner than outer half; postmedial line of hindwing crenulate, with cream color in scallopings; anal angle yellow-cream coloration; discal dot black in cream-colored area.

Male genitalia (figs. 802, 802a).--Shape of aedeagus is characteristic.

Female (fig. 346).--Maculation as in male, but purplish ranging from purple brown to brown. Below darker than in male, dark gray purple, but not brown purple.

Female genitalia (fig. 1079).

Variation.--The ground color of kayei varies from brown to almost greenish in the males and from purple brown to almost blue violet in the females. The uniformity of coloration also varies.

Type.--Prout in his description designated the male from Newcastle, Jamaica, as the type. This specimen is in the British Museum of Natural History.

Discussion.--Pero kayei is limited to Jamaica, where it is common in places. I have put kayei in this group because of the resemblance of the costal fold in the male genitalia to the costal fold of the other species in this group and because of the hairlike spines in the vesica. The juxta is similar to that of dularia.

Specimens examined.--17 males and 16 females, November and December.

JAMAICA. 1 mile N. Hardware Gap, Portland Parish; Newcastle; Chinchona.

Pero asterodia (Druce)

Azelina asterodia Druce, 1892:62.

Male (fig. 347).--Palpi blue green, outer fringe cream colored. Legs cream colored, spotted with blue green. Forewing blue green, but sometimes olive color along upper part of antemedial line; median area blue green, outer half darker than inner half; discal dot a fine white angulate line, never conspicuous; postmedial line cream colored, fine; subterminal area olive color, variegated with darker and lighter areas; blue-black line from middle of postmedial line to outer angle; slightly brownish along middle of postmedial line, sometimes yellowish toward costa; apex slightly darker than remainder of subterminal area; series of white dots along outer margin, lowest dot usually black, not white. Hindwing dark olive to olive color; anal angle yellowish; postmedial line white; discal dot a vague white spot. Below blue green; upper half of subterminal area of forewing with light brown patch; discal dot of forewing a thin white line; postmedial line of hindwing crenulate, scallops filled with cream color; anal angle yellowish brown, slightly

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browner toward top; discal dot black, divided, and resting in cream-colored area.

Male genitalia (figs. 803, 803a).—Aedeagus is characteristic.

Female.--Similar to male, but slightly darker.

Female genitalia (fig. 1080).

Variation.--The subterminal area of the forewing may be yellowish or almost uniform olive color. Some females are slightly brownish.

Type.--Druce described asterodia from a series of specimens from Central America. The female figured is marked with Druce's type label. Unfortunately this female is not conspecific with the remainder of the series, but is the female of caerula. A male from Coatepec, Mexico, also bearing a type label is in the U.S. National Museum and is designated as the lectotype.

Discussion.--Pero asterodia probably occurs only in Central America, and the Colombian specimen is probably mislabeled. The taxonomic position of this species is a problem. It is superficially similar to caerula and verda, but there are major differences in the genitalia.

Specimens examined.--69 males and 16 females, all year.

MEXICO. Chiapas: La Granja; Guerrero: Coatepec; Oaxaca: Puerto Elegio, Municipio Comaltepec, 2296 ft.; Veracruz: Cordova; Jalapa; Orizaba; Vera Cruz. GUATEMALA. Alta Verapaz: Baleu, Municipio San Cristobal, Verapaz, 1350 m.; Chimaltenango: Municipio Acatenango, Quisache, 750 m.; Limón: Chejel; Quezaltenango: Volcan Santa Maria. COSTA RICA. Cartago: Cachi, 3300 ft.; Cachi; Irazu, 6-7000 ft.; Juan Vinas; Orosi, 1200 m.; San Jose; Puntarenas: Monteverde, 1400 m.; not located: Candaleria Mtns.; San Carlos. PANAMA. Chiriqui: V. de Chiriqui, 2500-3500 ft. COLOMBIA. Choco: Siato, Rio Siato, Slopes of Choco, 5200 ft.; no specific locality: Colombia.

Pero dularia Poole, NEW SPECIES

Pero hoedularia; Kaye and Lamont, 1927:98.
[Misidentification.]

Male (fig. 348).—Palpi brown, outer fringe lighter. Legs cream colored, spotted with dark brown, particularly femora. Forewing basal area light brown, heavily scaled with blue black, particularly toward antemedial line; antemedial line black and well defined; median area brown, outer one-third darker than inner two-thirds; discal dot a vertical line, curved; subterminal area light brown, heavily variegated with dark brown, light brown, and steel gray; usually two patches of steel gray in indentations of postmedial line on radial veins; series of small blotches along remainder of postmedial line to inner margin; costa black with black band extending from middle of costa in an arc to center of outer margin; dark brown band running from middle of postmedial line to outer angle; series of white dots along outer margin, strongest toward apex. Hindwing brown, lighter toward anal angle, often dark, particularly in fresh specimens. Below brown, scaled with dark brown to black; postmedial line of forewing crenulate; discal dot of forewing a white line with central black streak; postmedial line of hindwing crenulate and accented with cream color on veins and in anal angle; discal dot of hindwing black in cream-colored area. Abdomen brown, often spotted with black.

Male genitalia (figs. 804, 804a).--Tip of aedeagus is straight with dentate point.

Female.--Similar to male, but usually much more uniform appearing, and generally larger and darker.

Female genitalia (fig. 1081).

Variation.--There is a little variation in this species, particularly the contrast in colors of the forewing. Some specimens are variegated with light and dark brown, but others are almost uniform brown. Some of the uniform specimens appear very much like the next species. The specimens from British Honduras are much darker than those from Rancho Grande, Venezuela. There seems to be much more variation in the British Honduran population than in any other. Two specimens from British Honduras are close in appearance to the next species. The Guatemalan specimens are much like the British Honduran population, but are faded. The Brazilian populations are the most brightly colored, but are often difficult to distinguish from hoedularia where the two occur together. Specimens from the Andes are duller and darker brown than others, but very few specimens are known from the Andes.

Types.--Holotype: Male, Rancho Grande [7 km. N. Maracay], 1100 m., Aragua, Venezuela, R.W. Poole, June 19, 1967, in U.S. National Museum of Natural History. Paratypes: Male in following collections from type locality: American Museum of Natural History, British Museum of Natural History, Cornell University collection, Museum of Comparative Zoology; 5 males in Universidad Central de Venezuela; 11 males in U.S. National Museum.

Discussion.--Pero dularia is common in Central America, but is more rare in South America except Venezuela. It is replaced in southern Brazil by the next species, although the two occur together in Santa Catarina.

Specimens examined.--305 males and 20 females, all year.

MEXICO. Chiapas: La Granja; Mexico: Santa Rosa; Tabasco: Tabasco; Veracruz: Misantla; Coatepec. BRITISH HONDURAS. Middlesex, Stann Creek District. GUATEMALA. Izabal: Cayuga. HONDURAS. La Cambre; Lancetilla. COSTA RICA. Not located: La Florida, 500 ft.; Sixola River. PANAMA. Canal Zone: Barro Colorado Island; Chiriqui: Chiriqui. VENEZUELA. Aragua: Rancho Grande [7 km. N. Maracay], 1100 m.; Carabobo: San Esteban Valley, Las Quigas; Valencia, 1500-3000 ft.; Yaracuy: Aroa; Palma Sola. TRINIDAD. Arima Valley, 800-1200 ft.; Caparo; "Trinidad." FRENCH GUIANA. Cayenne; St. Jean,

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Maroni. BRAZIL. Amazonas: Teperinhas; Pará: Para; Santa Catarina: Hansa Humboldt, 60 m.; Jaragua do Sul; Joinville; "St. Catherines"; São Paulo: Alto da Serra, 800 m.; Alto da Serra; Santos; Serra do Cubotas. BOLIVIA. Cochabamba: Chapare; R. Cristal Mayu, Chapare, 1000-2000 m.; Santa Cruz: Buenavista. PERU. Huánuco: Tingo Maria; Junin: Estancia Naranjal, San Ramon, 1000 m.; Puno: La Union, R. Huacamayo, 2000 ft.; La Oroya, 3100 ft.; Santo Domingo, 6000 ft.; Santo Domingo, 4500 ft.; Tinguri, 3400 ft. ECUADOR. Bolívar: Balzapamba; La Chima, Los Rios; Esmeraldas: R. Cayapas; S. Javier, R. Cachabi, 60 ft.; Imbabura: Paramba; Pichincha: S. Domingo do los Colorados. COLOMBIA. Boyacá: Muzo, R. Cantinero, 400 m.; Muzo, 400-800 m.; Cauca: Popayan; Choco: Juntas, Rio Tamana, Rio San Juan, 400 ft.; El Tigre, Tamaua, 320 ft.; Valle del Cauca: R. Dagua; Vaupés: Ob. Rio Negro, 800 m.

Pero hoedularia (Guenée)

Azelina hoedularia Guenée, 1857:158.
Egabra certissima Walker, 1858:1669. NEW SYNONYMY.

Male (fig. 349).—Forewing basal area not as heavily or darkly scaled as in dularia; outer third of median area contrasting with inner two-thirds, more uniform appearing than in dularia; subterminal area as in dularia, but generally not as dark. Hindwing almost uniform brown, anal angle not lighter; postmedial line conspicuous.

Male genitalia (figs. 805, 805a).—Tip of aedeagus is upcurved, not straight or spatulate at tip.

Female.—Similar to male of dularia, but anal angle of hindwing not light brown.

Female genitalia (fig. 1082).

Variation.—Individual variation of hoedularia is roughly equivalent to that of dularia. I did not find any geographical variation in hoedularia.

Types.—Guenée described hoedularia from "three males and one female" from "Nouvelle Fribourg, Bresil." The male figured by Oberthür (1912) is designated as the lectotype. This specimen is in the British Museum of Natural History. Walker described certissima as a noctuid. There are two specimens with this name in the Hope Museum, Oxford University, one from Brazil and the other from Ecuador. The Ecuadorean specimen is dularia and the Brazilian one is this species. Only the Brazilian specimen is listed in the original description.

Discussion.—Pero hoedularia seems to replace dularia in southern Brazil and Argentina, and this difference in ranges can sometimes be used to distinguish between the species. Where the two occur together in Santa Catarina, Brazil, dularia is larger and more uniform brown than hoedularia.

Specimens examined.—86 males and 16 females, all year.

BRAZIL. Minas Gerais: Sao Jacio del Rei; Vicosa; Paraná: Castro, 950 m.; Rio de Janeiro: Organ Mts., near Tijuca; Petropolis; Rio de Janeiro; Rio; Rio Grande do Sul: Guarani; Pelotas; Puerto Alegre, Rio Grande do Sul; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jeragua do Sul; Iguassu, Parana; Nova Bremen, 850 m.; Nova Bremen, 250 m.; Neu Bremen, Rio Laeiss; Nova Teutonia, 27-11° S, 52-23° W; Nova Teutonia; Rio Vermelho, 830 m.; Rio Laeiss, Blumenau; "St. Catherines"; São Paulo: Alto da Serra; Santos. PARAGUAY. Paraguarí: Sapucay; not located: Nellarica. ARGENTINA. Misiones: Haut Parana, San Ignacio; Puerto Aguirre, 55W, 25S; Tucumán: Tucuman, 450 m.; Tucuman; Tucuman, Ciudad Universidad.

GROUP 14

The superficial appearance of species in this group is fairly characteristic, but some are difficult to distinguish from others. A key to males follows based on their superficial appearance, but it should be used with care because many of the characteristics are relative. Females are rare in collections, and I have not been able to associate females with several species. The ostium of the female genitalia is well developed, and the bottom forms a lip covered by a hood-shaped last abdominal sternite.

The distribution of species in this group is restricted to the Andes, particularly Peru, Bolivia, and Ecuador, and its members are probably found in montane forests.

1. Forewing pearly gray blue in basal and subterminal areas 2

   Forewing entirely shades of brown or dull gray 3

2. Angulation of antemedial line into cell of forewing concave or even on top ..... homodoxa

   Angulation of antemedial line into cell of forewing convex on top ..... semiusta

3. Forewing with yellowish patch preceding postmedial line in cell 4

   Forewing without yellowish patch preceding postmedial line in cell 6

4. End of abdomen with 2 small spines projecting (part of valve, apt to break off) 5

   End of abdomen without 2 small spines projecting ..... brynhilda

5. Maculation heavier, projection of antemedial line into cell often elongated, black shade following it projecting toward discal dot ..... sula

   Maculation more uniform, projection of antemedial line into cell rounded, shorter, black shade following not projecting toward discal dot ..... mathilda

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6. Postmedial line of forewing followed by distinct slate-gray patch between Cu_1 and Cu_2 ..... lucena

Postmedial line of forewing not followed by distinct slate-gray patch between Cu_1 and Cu_2 7

7. Forewing with orange tint, particularly when faded; inner half of subterminal area grayish ..... latifascia

Forewing without orange tint; inner half of subterminal area not distinctly grayish 8

8. Two halves of discal dot of forewing not connected by white line; forewing brown, without grayish tint ..... hunaca

Two halves of discal dot of forewing connected by white line; forewing with strong grayish tint ..... spectrata and participa

Pero spectrata (Felder and Rogenhofer), NEW COMBINATION

Azelina spectrata Felder and Rogenhofer, 1873: pl. 123, fig. 13.

Male (fig. 350).--Dark brown with grayish tint when fresh. Palpi brown, inner edge and tip of third segment white. Legs brown, spotted with white, particularly tips of tibiae. Forewing basal area light gray brown; antemedial line followed by dark brown shade, strongest toward costa; median area light gray brown, outer one-third darker than inner two-thirds; discal dot black, consisting of lower dot, and upper line, line and dot connected on outer side by white line; postmedial line generally indistinct; subterminal area light gray brown, often with indistinct dark wavy line running vertically in middle; series of black and white dots along outer margin. Hindwing gray brown, postmedial line indistinct. Below brown, not gray; discal dot of forewing a white vertical line with fine black inner line; discal dot of hindwing two black dots in whitish area; hindwing light along inner margin.

Male genitalia (figs. 806, 806a).--Can be distinguished from participa by shapes of costal fold and juxta.

Female.--Unknown.

Variation.--There seems to be little if any variation in this species, although the Colombian specimens are smaller, browner, and more strongly marked than those from Ecuador or Peru. Specimens from Loja, Ecuador, are grayer and more poorly marked than the others.

Type.--A single male, in British Museum of Natural History, from "Venezuela."

Discussion.--Felder and Rogenhofer attributed this species to Walker, but it was never described by the latter. The type of spectrata is from Venezuela, probably from close to the Colombian border in the Andes. The distribution of spectrata is more northernly than that of participa. Although these two species are similar in appearance, mixed series from the same locality can be sorted with fair accuracy. The shape of the costal fold of the male genitalia can sometimes be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--118 males, all year.

COLOMBIA. Antioquia: Frontina; Mesopotamia, 5000 ft.; Cauca: Juntas; Choco: Pueblo Rico, San Juan, Slopes of Choco, 5200 ft.; Valle del Cauca: Rio Dagua; no specific locality: Colombia. ECUADOR. Bolivar: Balzapamba; Imbabura: Paramba, 1050 m.; Loja: El Monje, pres Loja; Palanda; San Fransisco; Environs de Loja; Napo-Pastaza: Baeza: El Topo, Rio Pastaza, 4200 ft.; La Victoria, Rio Pastaza, 3500 ft.; Puyo Oriente; Zamora: Zamora. PERU. Amazonas: Chachapoyas; Huambo; Cusco: Caradoc, Marcapata, 4000 ft.; Pampaconas; Huánuco: Cushi, 1900 m.; Pozuzo, 800 m.; Junin: Chanchamayo; Pasco: Huancabamba, 6-10,000 ft.; Piura: Huancabamba; Puno: Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; Oconeque; Santo Domingo, 6000 ft.; Uruhuasi, 7000 ft.; no specific locality: Peru. BOLIVIA. No specific locality: Bolivia.

Pero participa Poole, NEW SPECIES

Male (fig. 351).--Forewing markings more distinct than in spectrata; dark brown line in outer one-third of median area. Below postmedial line of hindwing yellow, better defined than in spectrata.

Male genitalia (figs. 807, 807a).--Can be identified by shapes of costal fold and juxta.

Female.--Unknown.

Types.--Holotype: Male, Rio Songo, [La Paz], Bolivia, 750 m., Fassl, in U.S. National Museum. Paratypes: 18 males, Huambo, Amazonas, Peru, in British Museum of Natural History.

Discussion.--The distribution of participa is more southernly than that of spectrata, although there is a wide overlap of ranges in Peru. Pero participa is smaller and more strongly marked than spectrata, and is usually distinguishable from it in series from the same locality. The shape of the costal fold can often be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--25 males, April, June, and December.

PERU. Amazonas: Huambo; Huánuco: Pozuzo; not located: Pumayaca; Utcuyacu, 5000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Charaplaya [Charapaya?], 1300 m., 65° W, 11° S; La Paz: Rio Songo, 750 m.; R. Tanampara; no specific locality: Bolivia.

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Pero lucena Poole, NEW SPECIES

Male (fig. 352).--Forewing maculation similar to that of spectrata, but better defined; ground color much lighter than in spectrata, without gray tone; slate-colored patch in subterminal area between M_3 and Cu_1. Hindwing brown; postmedial line developed, but not conspicuous. Below light brown to brown, not gray; postmedial lines of forewing and hindwing dark, well developed, vaguely followed by cream color.

Male genitalia (figs. 808, 808a).--Shapes of costal fold and juxta are characteristic.

Female.--Unknown.

Variation.--There is some variation in the development of the slate-colored patch along the postmedial line of the forewing, but never much. Specimens from Huambo, Peru, are slightly grayer and darker than others, and are somewhat similar in appearance to the preceding species.

Types.--Holotype: Male, R. Cristal Mayu, Chapare, Cochabamba, Bolivia, Dec. 1949, 1000-2000 m., L. Peña, in Cornell University collection. Paratypes: Environs de Loja, 4 males in British Museum of Natural History, 3 males in U.S. National Museum; Huambo, Amazonas, Peru, 8 males in British Museum of Natural History; Chachapoyas, Amazonas, Peru, 2 males in British Museum of Natural History; Pozuzo, Peru, 2 males in British Museum of Natural History.

Discussion.--This species is easily recognized by its light brown color, although its wing pattern and the male genitalia indicate it is probably related to spectrata and participa. Its distribution seems spotty, and it is absent from the Department of Puno in southern Peru, although present in central Peru and northern Bolivia.

Specimens examined.--33 males, April and May.

ECUADOR. Loja: El Monje near Loja; Environs de Loja; Zamora: Zamora. PERU. Amazonas: Chachapoyas; Huambo; Cusco: Marcapata, 4500 ft.; Huánuco: Pozuzo, 900 m.; Junín: Chanchamayo; Pasco: Oxapampa, 2000 m.; Piura: Huancabamba; no specific locality: Peru. BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m.; La Paz: Corvioco [Coroico?], 1000 m.; no specific locality: Bolivia.

Pero latifascia Poole, NEW SPECIES

Pergama semiusta ab latifascia Warren, 1904a:165.

Male (fig. 353).--Forewing basal area orange brown, but heavily shaded with light gray, particularly toward antemedial line; antemedial line followed by black, strongest toward costa and in middle indentation; median area orange brown, not darker toward postmedial line; discal dot a dorsal line and ventral dot, usually not connected by white line; cell slightly yellow from discal dot to postmedial line; postmedial line heavily waved; subterminal area gray along postmedial line, brown toward outer margin; series of black and white dots along outer margin. Hindwing brown with vague postmedial line; series of black dots along outer margin, strongest toward anal angle. Below similar to spectrata, but postmedial line heavily waved and accented with cream-colored scales; lighter toward inner margin.

Male genitalia (figs. 809, 809a).--Shape of costal process will distinguish this species from others in group.

Female.--Unknown.

Type.--Holotype: Male, Santo Domingo, Carabaya, [Puno], Peru, 6000 ft., November 1901, G. Ockenden, in British Museum of Natural History. This specimen is the type of Warren's aberrational name.

Discussion.--This species is easily recognized by the waved postmedial line of the forewing and its salmon coloration.

Specimens examined.--60 males, all year.

PERU. Amazonas: Huambo; Huánuco: Pozuzo, 800 m.; Junín: Chanchamayo, La Merced; Chanchamayo; Rio Colorado, 2500 ft.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft., Rio Aguachini, Cas. del Pichis; Puno: Chirimayo, 1000 ft.; La Oroya, 3100 ft.; La Union, Rio Huacamayo, 2000 ft.; R. Inambari, 6000 ft.; Santo Domingo, Carabaya; Tinguri, 3400 ft.; not located: Pumayaca; no specific locality: Peru. BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m.; Yunga del Espiritu Santo; La Paz: Yungas de la Paz, 1000 m.; no specific locality: Bolivia.

Pero sula Poole, NEW SPECIES

Male (fig. 354).--Brown to dark brown, darkest when fresh. Antennae pectinate. Palpi and legs as in spectrata. Forewing basal area brown, slightly red toward inner margin; antemedial line with angulation in cell usually extending almost to discal dot (variable); median area brown, darker band in outer one-third paralleling postmedial line; discal dot a dorsal line and ventral dot, usually connected with white; postmedial line waved to almost even; dark shade following postmedial line, particularly toward middle of wing, and another in middle of subterminal area; series of black and white dots along outer margin. Hindwing brown; postmedial line poorly developed; anal angle slightly lighter, sometimes yellow, but never conspicuously so; series of black dots along outer margin, dots strongest in anal angle. Below brown, in darker specimens with almost purple tint; postmedial line of hindwing strongly waved, outlined with cream-colored scales; discal dot of hindwing large, black.

Male genitalia (figs. 810, 810a).--May be separated from mathilda by shape of costal fold, which is concave at top, not convex. Subscaphium has spine in center, not toward top as in mathilda.

Female (fig. 355).--Similar to male; antennae simple; coloration usually more uniform appearing; discal dot of forewing above usually less well developed.

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Female genitalia (fig. 1083).--Can be distinguished from mathilda by shape of ostium.

Variation.--The coloration of sula is variable from brown to dark purple brown. This is complicated by the fact that faded specimens are always brown. The yellow blotch in the cell of the forewing between the discal dot and the postmedial line may be present or absent or only partially developed. The shape of the angulation of the antemedial line into the cell is also variable.

The specimens from Huambo, Amazonas, Peru, are different from any other population of this species. The subterminal area of the forewing above is gray, although their maculation is similar to that of sula from other localities. In the male genitalia of the Huambo specimens, the prong coming off the left costal fold is thick and the right one is absent. However, because of the variation in the process in other specimens and populations, I do not believe this difference is of specific value.

Types.--Holotype: Male, Ciudad Universitaria, 800 m., Tucumán, 17-II-1959, Argentina, J.G.F. Clarke, in U.S. National Museum. Allotype: Female, Tucumán, Argentina, in U.S. National Museum. Paratypes: From type locality, 1 male in U.S. National Museum; Tucumán, 2 males and 3 females in U.S. National Museum, 8 males and 5 females in British Museum of Natural History; Siambon, Tucumán, 1600 m., Argentina, 6 males and 1 female in British Museum of Natural History; Siambon, 1700 m., 1 male and 1 female in British Museum of Natural History.

Discussion.--This species and mathilda are closely related and are often difficult to distinguish. In general, sula is smaller, more strongly marked, and the antemedial line of the forewing extends far in toward the discal dot. The distribution of sula seems to be centered in Bolivia and Argentina and of mathilda in Peru. However, they do occur together in some places.

Specimens examined.--65 males and 15 females, all year.

PERU. Amazonas: Huambo; Cusco: Pampaconas River; Junin: Huacapistana, 1800 m.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Piura: Huancabamba; Puno: La Oroya, 3100 ft.; Oconeque, 7000 ft.; Santo Domingo, 6000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Caraplaya [Charapaya?], 1300 m., 65° W, 11° S; Incachaca; Upper R. Toro, La Merced, 3000 m.; Yunga del Espiritu Santo; Yungas del Palmar, 2000 m.; La Paz: Rio Songo, 750 m.; not located: Negnejahnira, 8000 ft.; no specific locality: Bolivia. ARGENTINA. Tucumán: Siambon, 1600 m.; Siambon, 1700 m.; Tucuman, 450 m.; Tucuman; Tucuman, Ciudad Universitaria, 800 m.

Pero mathilda (Butler)

Azelina mathilda Butler, 1881:36.

Male (fig. 356).--Similar to sula, but usually larger, and when fresh, gray brown, not brown, although specimens fade rapidly. Forewing angulation of antemedial line into cell not as strongly developed as in sula; yellow blotch in cell between discal dot and postmedial line more likely to be present than in sula, but also variable.

Male genitalia (figs. 811, 811a, 812-815).--Costal fold is convex, not concave dorsally, and spine of subscaphium is toward top and not middle.

Female (fig. 357).--Forewing coloration more uniform appearing than in male, perhaps browner (no fresh specimens available).

Female genitalia (fig. 1084).--Shape of ostium will distinguish this species from sula.

Variation.--This species is exceedingly variable, both its superficial appearance and the male genitalia. The forewing may appear spotted, rough, or may be uniform or any degree in between. The yellow blotch in the cell of the forewing may be present, or absent, but is usually present. The color of the outer one-third of the median area of the forewing varies considerably in darkness as does the strength of the dark shade in that area. In the females, the veins of the forewing may be streaked with dark brown. The shape of the prong of the costal fold of the male genitalia is variable, and can be long, short, or sometimes even forked. Individual variation is great so that any geographic variability, if present, is not apparent in the series available, although the Colombian specimens tend to be more uniform and perhaps grayer than the more southern populations.

Type.--Described from a single male from "Ecuador" in the British Museum of Natural History.

Discussion.--In areas where mathilda and sula occur together, mathilda tends to be more uniform in coloration, although this is a generalization and not a rule. The angulation of the antemedial line into the cell of the forewing (less developed in mathilda) is probably the best superficial character for separating the two species. The distribution of mathilda is more northerly than that of sula.

Specimens examined.--276 males and 13 females, all year.

COLOMBIA. Antioquia: Frontina; Cauca: Popayan; Torne; Cundinamarca: Pacho, 2200 m.; Tolima: Canon del Tolima, 2500 m.; Tochesito, Quindiu, 3000 m.; not located: San Antonio, W. Colombia, 5800 ft.; no specific locality: Colombie. ECUADOR. Loja: Loja; Environs de Loja; Napo-Pastaza: Baeza; Tungurahua: El Topo, Rio Pastaza, 4200 ft.; Environs de Ambato; Hacienda Macahy, Valle Pastaza, Province Ambato; La Victoria, Rio Pastaza, 3500 ft.; Rio Verde, Rio Pastaza, 5000 ft.; Rosario, St. Inez, 1250 m.; Zamora: Zamora; no specific locality: Ecuador. PERU. Amazonas: Chachapoyas; El Provenir, 900 m.; Huambo; R. Tabaconas, 6000 ft.; Cusco: Pampaconas River; Huánuco: Cushi, 1900 m.; Pozuzo, 800-1000 m.; Pozuzo, 5000-6000 ft.; Pozuzo, 800 m.; Junin: Chanchamayo; Huacapistana, 1800 m.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6400 ft.; Oxapampa; Piura: Huancabamba; Puno: Chirimayo, 1000 ft.; La Oroya, 3100 ft.; Oconeque, 7000 ft.; Santo Domingo, 6000 ft.; Uruhuasi, 7000 ft.; not located: Chaupe,

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6100 ft.; San Remon, 3000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; Upper Rio Toro, La Merced, 3000 m.; Yunga del Espiritu Santo; Yungas del Palmar, 2000 m.; La Paz: La Paz; Yungas de la Paz, 1000 m.; no specific locality: Bolivia.

Pero homodoxa Prout

Pero homodoxa Prout, 1928:64.

Male (fig. 358).--Palpi and legs brown with cream-colored spots. Forewing brown to orange brown with large areas of gray; basal area light gray spotted with few brown scales, but never many; projection of antemedial line in discal cell squared; black shading following this projection running toward discal dot, particularly along radial vein; median area orange brown, but becoming grayish in inner half, particularly toward costa; discal dot a dorsal line and ventral round spot, generally not connected by white line; discal cell sometimes yellowish between discal dot and postmedial line; inner half of subterminal area strongly light gray with dark blackish band following postmedial line; outer half of subterminal area variegated brown and gray. Hindwing brown, with indistinct postmedial line, usually followed by vague gray band in anal angle. Below as in spectrata, but light cream-colored areas replaced with light gray.

Male genitalia (figs. 816, 816a).--Shape of costal fold will distinguish this species from semiusta. Costa of valve is developed into spine.

Female (fig. 359).--Forewing light brown, without large gray areas; maculation as in male. Below light brown to orange brown.

Female genitalia (fig. 1085).

Variation.--Specimens from Peru are browner than those from Ecuador. The Ecuadorean specimens are gray, almost bluish. In the Peruvian specimens the extension of the black shading of the antemedial line into the discal cell of the forewing above is usually strong, but this extension is not strong in the Ecuadorean specimens. In the Peruvian specimens the projection of the antemedial line into the discal cell is consistently squared, but sometimes not in Ecuadorean specimens. Bolivian specimens are browner and smoother appearing than any others.

Type.--Prout described this species from a longer series, but the type was stated to be from Santo Domingo, Peru. The male bearing Prout's type label from this locality in the British Museum of Natural History is designated as the lectotype.

Discussion.--This species and the next are superficially similar and can be difficult to distinguish. In Peru the external differences between the two are clearcut and consistent, but in Ecuador the differences tend to become vague. In Ecuador the truncate projection of the antemedial line in the discal cell of the forewing is the only useful character, and this is not always consistent. The male genitalia are the best way to identify and separate these two species; the spine of the costa of the valve of homodoxa can often be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--109 males and 1 female, all year.

ECUADOR. Loja: El Monje, pres Loja; Environs de Loja; San Francisco; Zamora: Palanda; Zamora. PERU. Amazonas: Chachapoyas; Huambo; Cusco: Callanga, 1800 m.; Huánuco: Cusni, 1900 m.; Pozuzo, 5000-6000 ft.; Pozuzo; Junin: Chanchamayo; Rio Colorado; Lima: Lima-Chanchamayo; Loreto: Huallaga; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Oxapampa, 6400 ft.; Puno: Huacamayo, 3100 ft.; La Oroya, R. Inambari, 3100 ft.; R. Inambari, 6000 ft.; Santo Domingo, 6000 ft.; not located: Chaupe, 6100 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1000-2000 m.; Yunga del Espiritu Santo; Yungas del Palmar, 1000 m.; La Paz: Rio Songo, 750 m.; Yungas de la Paz, 1000 m.

Pero semiusta (Butler)

Azelina semiusta Butler, 1881:36.

Male (fig. 360).--Forewing similar to that of homodoxa, but grayer and without orangish tint; projection of antemedial line into cell rounded, sometimes sharp and steep at its tip; black shading of this angulation not extending into cell.

Male genitalia (figs. 817, 817a).--Can be distinguished from preceding species by shape of costal fold of right valve.

Female.--Unknown.

Variation.--Variation in this species seems to be rare, and semiusta is never as variable as homodoxa.

Type.--Described from a single male from "Ecuador" in British Museum of Natural History.

Discussion.--The projection of the antemedial line of the forewing will almost always separate homodoxa and semiusta. In homodoxa this projection is squared with black extending from its tip toward the discal dot, but in semiusta the projection is rounded and the black shading does not reach the discal dot. The presence or absence of the spine on the costa of the valve in the male genitalia can often be seen by brushing away the scales from the tip of the abdomen.

Specimens examined.--119 males, all year.

ECUADOR. Loja: El Monje, pres Loja; Loja; Tungurahua: El Rosario, Rio Pastaza, 4900 ft.; La Victoria, Rio Pastaza, 3500 ft.; Zamora: Palanda; Zamora; no specific locality: Ecuador. PERU. Amazonas: Huambo; Junin: Chanchamayo; Puno: Agualani, 9500 ft.; La Oroya, Rio Huacamayo, 2000 ft.; Oconeque, 7000 ft.; Rio Huacamayo, 3100 ft.; Rio Inambari to Limbani; Rio Inambari, 6000 ft.; R. Siucuri, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3000 ft.; Yahuarmayo, 1200 ft.; San Martin: Jepelacio; not located: Pumayaca; Tuca Mine; no specific locality: Peru.

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Pero brynhilda Prout

Pero brynhilda Prout, 1928:65.

Male (fig. 361).--Palpi brown, inner fringe and tip of third segment cream colored. Legs brown, heavily spotted with cream-colored scales, particularly tips of tibiae and tarsi. Forewing brown with large areas of brown flecked with gray; basal area gray, but heavily scaled with brown, particularly toward base; median area brown, slightly gray toward costa; postmedial line preceded by dark brown band, sometimes filling most of outer one-fourth of median area, sometimes discrete; yellowish blotch between discal dot and postmedial line usually well developed; discal dot large, composed of dorsal line and ventral dot; inner half of subterminal area grayish, flecked with brown, with only vague dark shade following postmedial line; outer half of subterminal area also gray, but brown scaling much heavier and separated from inner half of subterminal area by wavy brown line. Hindwing brown, lighter and grayer toward anal angle; postmedial line indistinct. Below light brown.

Male genitalia (figs. 818, 818a, 819-821).--Easily recognized by shape of costal fold of valve.

Female (fig. 362).--Forewing maculation as in male, but without gray areas; uniformly brown except darker one-fourth of median area; discal dot large, two parts connected by white line. Below darker brown than in male.

Female genitalia (fig. 1086).--Can be identified by shape of ostium.

Variation.--Peruvian specimens are much grayer and have the yellow blotch in the cell of the forewing better developed than those from Bolivia. In the male genitalia there is a remarkable amount of variation in the shape of the costal fold (figs. 819-821) and the tip of the aedeagus.

Types.--Prout described brynhilda from 16 males and 1 female and stated "S.E. Peru, Carabaya, Agualani, 9000-9500 ft., 10 males in coll. Tring Mus., including the type." The specimen from this locality with Prout's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--There is a possibility that two species are involved, one in Peru and the other in Bolivia, but because the character that could be used to separate them, i.e., the shape of the costal fold, proved to be so variable, I was not able to make any clear-cut distinction between the two. The females are only questionably associated with the males.

Specimens examined.--44 males and 3 females, all year.

PERU. Huánuco: Pozuzo, 5-6000 ft.; Pasco: Huancabamba; Puno: Agualani, 9000 ft.; La Oroya, 3000 ft.; Limbani, 9500 ft.; Oconeque, 7000 ft.; Quinton, 5000 ft.; Tinguri; Uruhuasi, 7000 ft.; not located: Utcuyacu, 5000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; Yunga de Espiritu Santo; Yungas del Palmar, 2000 m.; not located: Tanampaya; no specific locality: Bolivia.

Pero hunaca Poole, NEW SPECIES

Male (fig. 363).--Palpi brown, outer fringe and tip of third segment cream colored. Legs brown, flecked with cream-colored scales. Forewing basal area grayish, but heavily scaled with brown giving it brown appearance; median area brown, outer one-third dark brown; yellow blotch not present between discal dot and postmedial line; discal dot a dorsal line and ventral dot, not connected by white line; subterminal area grayish, not divided into inner and outer half, although central wavy brown line in middle present; vague dark shade following postmedial line. Hindwing brown; postmedial line clear, but not prominent. Below brown; postmedial lines of both wings wavy, distinct, and accented with white.

Male genitalia (figs. 822, 822a).--Shape of costal fold will easily distinguish this species from any other in group.

Female.--Unknown.

Variation.--Little, if any.

Types.--Holotype: Male, Quiroz, Piura, Peru, 14-XI, 1933, in American Museum of Natural History. Paratypes: 2 males, Huancabamba, Cerro de Pasco, Peru, 6-10,000 ft., in British Museum of Natural History; Huambo, Amazonas, Peru, 3 males in British Museum of Natural History.

Discussion.--This is an unusual species, particularly the male genitalia. The costal fold might be considered to represent a primitive state; it is not modified as in the other species of this group.

Specimens examined.--14 males, April, October, and November.

PERU. Amazonas: Huambo; Chachapoyas; El Porvenir, 900 m.; Huánuco: Pozuzo, 800 m.; Junin: Chanchamayo; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5000-6000 ft.; Piura: Quiroz; no specific locality: Peru.

GROUP 15

Group 15 is not completely distinct from the two following groups. Generally it consists of small species. The uncus is usually slightly bifurcate at the tip, and the subscaphium is often shaped as in figure 827.

The species in group 15 are found usually in the Andes, but a few are from southern Brazil or Argentina. The group is characterized by a large number of endemic or unique species. However, many members have been taken in dry areas. These parts of South America have been poorly collected and may not represent a true picture. Two or three species have developed pectinate antennae and a robust, hirsute appearance, probably independently.

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Possibly this is an adaptation to high altitudes because most of the species with pectinate antennae are from altitudes of about 10,000 feet.

Pero colaloa Poole, NEW SPECIES

Female (fig. 364).--Legs brown but tarsi cream colored, heavily spotted with brown. Forewing brown, basal area slightly lighter than median area; costa of basal area slightly flecked with gray brown; median area darker along postmedial line and between two outward angulations of antemedial line; discal dot black, usually double; postmedial line finely crenulate, followed by vague dark gray band in subterminal area; outer half of subterminal area slightly darker than inner. Hindwing dull brown; postmedial line evenly rounded, fine brown line followed by thin light band; outer margin scalloped. Below dull white, heavily scaled with brown; discal dot of forewing a black line in dull white area; postmedial line a white line, evenly rounded; discal dot of hindwing large, black; postmedial line of hindwing whiter than remainder of wing.

Female genitalia (fig. 1087).

Male.--Unknown.

Variation.--The clarity of the markings varies from specimen to specimen, but there are too few specimens to comment on geographical variation.

Types.--Holotype: Female, El Siambon, 1700 m., Tucumán, Argentina, R. Schreiter, in British Museum of Natural History. Paratypes: 1 female, S. Pedro de Colaloa, Argentina, in U.S. National Museum; 1 female from Tucumán, Argentina, in U.S. National Museum.

Discussion.--This species is known only from three females that are similar to the females of the next two species, but there are differences in the female genitalia. Its true relationships cannot be determined until the male is known.

Specimens examined.--3 females, December.

ARGENTINA. Tucumán: El Siambon, 1700 m.; S. Pedro de Colaloa, Trancas; Tucuman.

Pero cocha Poole, NEW SPECIES

Male (fig. 365).--Antennae brown, much lighter dorsally than ventrally. Palpi brown, tipped with cream color. Legs with tibiae brown, speckled with cream color; tarsi cream colored. Forewing brown to red brown; basal area uniform except few dark scales; antemedial line brown, strongest toward costa; median area slightly darker than either basal or subterminal area; median area darkest in outer one-fifth, or with dark brown band paralleling postmedial line in this position; discal dot double, sometimes dots separate, sometimes connected; subterminal area concolorous with basal area; dark shade along postmedial line and another running length of subterminal area at about middle; veins in subterminal area sometimes slightly marked with dark brown. Hindwing light gray brown to red brown; postmedial line light, never conspicuous. Below light gray brown to red brown; postmedial line of forewing straight; postmedial line of hindwing slightly waved; inner half of hindwing lighter than costal half.

Male genitalia (figs. 823, 823a).--May be distinguished from next species by shapes of aedeagus and juxta.

Female (fig. 366).--Similar to male, but darker; veins of forewing more strongly accented with dark brown. Below darker.

Female genitalia (fig. 1088).

Variation.--Although cocha is known only from a few specimens, it is probably variable. The three males differ in ground color, two are red brown and the third is light gray brown. One of the two females is considerably darker than the other.

Types.--Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 2 males and 1 female from type locality in U.S. National Museum.

Discussion.--Although cocha is similar to the next species and probably occurs with it, it can be easily distinguished from inca by the male and female genitalia. The postmedial line of the forewing above in cocha is more irregular than in inca.

Specimens examined.--3 males and 2 females.

BOLIVIA. Cochabamba: Incachaca.

Pero inca Poole, NEW SPECIES

Male (fig. 367).--Forewing similar to that of preceding species, but light brown (based on only one specimen); maculation less distinct than in cocha; postmedial line straighter and followed by gray shade, not dark shade as in preceding species. Hindwing more heavily flecked with dark scales, light band before fringe not present in cocha. Below maculation similar to that in cocha, but light brown and flecked with dark scales.

Male genitalia (figs. 824, 824a).--Can be distinguished from preceding species by shapes of tip of aedeagus and uncus.

Female (fig. 368).--Similar to male, but larger; light brown, not dark brown as in preceding species.

Female genitalia (fig. 1089).

Types.--Holotype: Male, Cochabamba, Bolivia, January 1950, in American Museum of Natural History. Allotype: Female from type locality in American Museum of Natural History.

Discussion.--Pero inca is known only from one male and one female from the department of Cochabamba, Bolivia.

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Specimens examined.--1 male and 1 female.

BOLIVIA. Cochabamba: "Cochabamba."

Pero jonesaria (Schaus)

Azelina jonesaria Schaus, 1897:162.

Male (fig. 369).--Antennae light dorsally. Legs with inner faces cream colored. Forewing basal area uniform brown, although slightly darker toward inner margin; antemedial line dark brown with dark brown patch in middle angulation and at Cu; median area slightly darker than basal area, with dark brown band in outer one-fifth paralleling postmedial line; costal one-third of median area yellowish in some specimens; discal dot double, but two halves usually joined; postmedial line dark brown with sharp indentation on 2A; subterminal area concolorous with basal area; vague dark band in subterminal area paralleling postmedial line and another centrally located; series of black dots along outer margin. Hindwing dark brown; postmedial line a light band, preceded by vague dark band in basal area. Below dark brown, maculation vague, almost uniform; postmedial lines of both wings cream colored, not overly distinct; discal dot of hindwing a small black dot.

Male genitalia (figs. 826, 826a).--Shapes of uncus and subscaphium will distinguish this species from others in group.

Female (fig. 370).--Forewing maculation similar to that of male, but upper one-third of median area almost always distinctly light yellow brown; discal dot larger; angulations of postmedial line more pronounced than in male. Below markings clearer than in male; postmedial lines of forewing and hindwing distinct and dark; discal dots of both wings large and black.

Female genitalia (fig. 1090).

Variation.--The yellow patch on the costa of the forewing may or may not be present in the males, but it is almost always present in the females. There is a slight amount of variation in the distinctness of maculation from specimen to specimen.

Type.--Schaus described jonesaria from three males and three females. The specimen marked "Castro, Parana" with U.S.N.M. type number 12426 with the male genitalia on slide R.W.P. 10554 is designated as the lectotype.

Discussion.--Pero jonesaria is known only from Castro, Paraná, Brazil, where it appears to be common.

Specimens examined.--20 males and 14 females.

BRAZIL. Paraná: Castro.

Pero neuquena Poole, NEW SPECIES

Male (fig. 371).--Antennae lighter dorsally than ventrally. Legs vaguely spotted with cream-colored scales. Forewing maculation usually vague; basal area dull brown, uniform; antemedial line brown; median area slightly darker than either basal or subterminal areas; upper one-fourth to one-third of median area often yellowish, but variable from specimen to specimen; discal dot present to vague, double; outer one-fourth of median area darker than inner three-fourths; postmedial line incurved toward inner margin, but variable; subterminal area concolorous with basal area, uniform except vague dark band following postmedial line. Hindwing dull brown, with vague postmedial line preceded along inner margin by darker band. Below almost uniformly dull brown except hint of white postmedial line in forewing and hindwing.

Male genitalia (figs. 825, 825a).--Small size of this species and shape of subscaphium will separate it from next species.

Female.--Similar to male, but maculation usually more distinct.

Female genitalia (fig. 1091).

Variation.--One female from Neuquen, Argentina, is light brown in the basal and subterminal areas of the forewing and has the median area dark brown. The Mendoza specimens are slightly more strongly marked than those from Neuquen.

Types.--Holotype: Male, 2 km. S. Neuquen, Neuquen, Argentina, 22-II-1952, J. Foster, in American Museum of Natural History. Allotype: Female from type locality in American Museum of Natural History. Paratypes: 3 males and 5 females from type locality in American Museum of Natural History, and 1 male and 1 female in British Museum of Natural History; Neuquen, 11 males and 3 females in American Museum of Natural History, and 2 males in British Museum of Natural History; San Martin de los Andes, Neuquen, 1 male in American Museum of Natural History.

Discussion.--The soft gray-brown appearance of this species will usually distinguish it from anything else in the genus, but specimens from Mendoza can sometimes be confused with those of minopenaria.

Specimens examined.--22 males and 11 females, April.

ARGENTINA. Mendoza: Mendoza; Neuquen: 2 km. S. Neuquen; Neuquen; San Martin de los Andes.

Pero minopenaria (Oberthür)

Azelina minopenaria Oberthür, 1912:297.

Male (fig. 372).--Forewing light to dark brown; discal dot usually double, although two parts often fused; lower half of postmedial line wavy, upper half straight; postmedial line followed by darker band in subterminal area, darker and more prominent than in any other species of this group. Below inner margin of hindwing cream colored, heavily flecked with darker scales; discal dot of hindwing large, black.

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Male genitalia (figs. 827, 827a).--Shapes of juxta and subscaphium will separate this species from other species in group.

Female.--Similar to male, but not strongly marked.

Female genitalia (fig. 1092).

Variation.--This species varies from light to dark brown, with much variation in the distinctness of the markings. There are no obvious geographical trends, but the number of specimens is small. One specimen from Uruguay has the yellowish costa of the forewing characteristic of some of the other species in this group. Darker specimens tend to be more uniform in coloration than lighter ones.

Type.--The type of minopenaria is a male from "Republique Argentina." This specimen is in the British Museum of Natural History.

Discussion.--This species combines features of both cocha and inca, and individuals resembling both species exist, but minopenaria is smaller and has a different distribution.

Specimens examined.--25 males and 2 females, all year.

BRAZIL. Rio Grande do Sul: Estancia do Tigre. URUGUAY. Lavalleja: La Estanzuela, Colon; Montevideo: Colon, Montevideo; Tacuarembó: Chico; Tacuarambo [sic!]. ARGENTINA. Buenos Aires: Buenos Aires; Del Viso; Cordoba: Cordoba, Paragonia; Entre Ríos: La Soledad; La Rioja: La Rioja; not located: Le Prado; no specific locality: Argentina.

Pero scotica (Hübner)

Episema scotica Hübner, 1823:28, figs. 359-360.

Male (fig. 373).--Antennae strongly serrate; cream colored on dorsum of shaft. Palpi dark brown. Legs dark brown, but tarsi cream colored. Forewing brown on dull white base; median area forming triangle on costa of about three-fourths length of wing, and basal and subterminal areas converging beneath it; lower half of median area dark brown, upper half light; discal dot two small black dots. Hindwing dull white flecked with brown, particularly along outer margin; postmedial line developed only toward inner margin. Below brown scaling on dull white base; inner half of hindwing lighter than outer half. Thorax dark brown, darker than abdomen.

Male genitalia (figs. 829, 829a).--Similar to genitalia of minopenaria, but larger, uncus longer, and subscaphium and juxta different in shape.

Female.--Similar to male, but antennae not as strongly serrate; forewing browner; discal dots larger; antemedial line better developed; postmedial line of hindwing distinct.

Female genitalia (fig. 1093).

Type.--The type of this species has probably been destroyed, but I have seen Hübner's original illustration in the library of the British Museum of Natural History.

Discussion.--Hübner described this species as a noctuid. The only known specimens are in the Museum of Comparative Zoology, Harvard University, and are from Uruguay. This species is distinguished by the shape of the median area of the forewing. Hübner's figure leaves no doubt as to the species illustrated.

Specimens examined.--2 males and 1 female, March.

URUGUAY. Florida: Casupa; Rio y Florida.

Pero curla Poole, NEW SPECIES

Male (fig. 374).--Antennae strongly serrate. Forewing gray brown; basal area gray, flecked with dark scales, not well demarcated from median area toward costa; antemedial line slanting outward to inner margin; median area dark gray brown; costal one-third yellow, but costa itself gray brown; discal dot absent; postmedial line waved, followed by dark band in subterminal area. Hindwing gray brown; inner margin yellow; postmedial line a thin light band, followed by vague dark band in subterminal area. Below dark gray brown, but inner margins of both wings white, particularly of hindwing; discal dot of forewing a vague white rectangle; postmedial line of hindwing dark brown, followed by white band; discal dot of hindwing a black spot.

Male genitalia (figs. 830, 830a).

Female.--Unknown.

Type.--Holotype: Male, Pelotas, Rio Grande do Sul, Brazil, January 16, 1963, C.M. Biezanko, in British Museum of Natural History.

Discussion.--The fuzzy appearance and the yellow costa (if this is constant for the species) are characteristic. This species is superficially similar to some of the following species from the Andes.

Specimen examined.--1 male, January.

BRAZIL Rio Grande do Sul: Pelotas.

Pero castraria (Schaus), NEW COMBINATION

Azelina castraria Schaus, 1898:147.

Male (fig. 375).--Legs with tarsi cream colored. Forewing brown, with velvety appearance; basal area brown, scaled with darker brown; median area with light dash running along Cu from base of wing through median area to just before postmedial line; discal dot single; outer one-fifth of median area darker than inner four-fifths; median area slightly orange in discal cell; postmedial line dark brown, followed by dark gray shade (sometimes slightly violet), light brown band, and then dark brown from there to outer margin. Hindwing light brown to dull white, scaled with darker brown, particularly as dark vague band from base through upper half of wing

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to outer margin; inner margin shaded with brown; postmedial line in anal angle brown to orange brown. Below orange brown along costa of both wings, particularly of hindwing; postmedial lines of both wings white and conspicuous; inner margin of hindwing white and contrasting with remainder of wing; discal dot of hindwing black and sharp.

Male genitalia (figs. 831, 831a).--Arm of tip of aedeagus and shape of juxta are characteristic.

Female.--Unknown.

Type.--Schaus described this species from an indefinite number of specimens from Castro, Paraná, Brazil. The male bearing his type label is designated as the lectotype and is in the U.S. National Museum.

Discussion.--Pero castraria is distinctive, particularly the aedeagus of the male genitalia, but I believe it is best placed with minopenaria and its relatives.

Specimens examined.--15 males.

BRAZIL. Paraná: Castro.

Pero ochriplaga Warren

Pero ochriplaga Warren, 1901:491.

Male (fig. 376).--Antennae strongly pectinate; shaft cream colored. Palpi with inner side of second segment cream colored. Legs cream colored, spotted with brown. Forewing basal area light gray brown, flecked with black, particularly toward antemedial line and inner margin; median area lightest between discal dot and antemedial line, darkest opposite middle of postmedial line; discal dot double, black; upper one-fourth of postmedial line followed by vague orange-yellow blotch; postmedial line black; subterminal area light gray brown, mottled with light and dark bands. Hindwing postmedial line obscure, brown, strongly marked only in anal angle. Below discal dot of forewing a white line; inner margin of forewing dull white, no conspicuous light or dark areas in forewing; postmedial line of hindwing crenulate, dark brown; inner margin cream colored, spotted with brown scales; discal dot a large black rectangle.

Male genitalia (figs. 832, 832a).--Characterized by shapes of uncus and subscaphium.

Female.--Unknown.

Type.--Warren described ochriplaga from a single male from Marca, Peru, in the British Museum of Natural History.

Discussion.--This species comes from the western coast of Peru and is perhaps found in dry localities. The antennae are strongly pectinate, but the male genitalia indicate that ochriplaga is most closely related to castraria.

Specimens examined.--3 males, December.

PERU. Ancash: Marca, 3000 ft.; Lima: Lima-Matucuna [Matucana?].

Pero acopa Poole, NEW SPECIES

Male (fig. 377).--Antennae pectinate; cream colored dorsally. Legs cream colored except bases of femora. Forewing brown, variable in darkness; basal area brown, uniform (although in some specimens darkly scaled); discal dot double, but usually with dots connected; outer one-fifth of median area darker than inner four-fifths; costa may or may not be yellowish; vague dark band may occur after postmedial line, but may be indistinct or absent; often another dark shade in middle of subterminal area, but again poorly developed. Hindwing brown, darker than forewing; postmedial line poorly developed; subterminal area in anal angle lighter than remainder of wing. Below similar to other species in this group; coloration more uniform appearing; inner edge of hindwing, although lighter, not as obvious as in most other species in group.

Male genitalia (figs. 828, 828a).--Shapes of subscaphium and aedeagus will identify this species.

Female.--Similar to male, but antennae simple; wings darker than in average male.

Female genitalia.--Unknown.

Variation.--The coloration of this species, like most others in this group, is variable. Some specimens have the costa of the forewing in the median area yellow, some are intermediate, and the rest are brown.

Types.--Holotype: Male, Tambomachay, Cusco, Peru, 3690 m., 3-II-1959, J.G.F. Clarke, in U.S. National Museum. Allotype: Female, Accpampa, [Huancavelica], Peru, 11,500 ft., in U.S. National Museum. Paratypes: From allotype locality, 2 males in U.S. National Museum, 3 males in Cornell University collection, and 3 males in British Museum of Natural History.

Discussion.--Pero acopa is placed in this section of the present species group with uncertainty because it has such unique characteristics as the pectinate male antennae and the shapes of the uncus and of the subscaphium. However, the polymorphism of the yellow versus brown costa of the forewing, characteristic of the first species of this group, is present.

This is a variable species, but the pectinate antennae of the male and the shape of the wing will easily identify it. The holotype from Tambomachay, Cusco, Peru, is different from the specimens of acopa from Acopampa in color, but it is the only fresh specimen available. All known specimens of acopa are from above 10,000 feet elevation.

Specimens examined.--10 males and 1 female, February.

PERU. Cusco: Tambomachay, 3690 m.; Huancavelica: Acopampa, 11,500 ft.; no specific locality: Peru.

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Pero geminipuncta (Warren), NEW COMBINATION

Azelina geminipuncta Warren, 1905b:367.

Male (fig. 378).--Antennae pectinate. Palpi dark gray. Legs with femora dark gray; tibiae and tarsi cream colored. Forewing basal area dark gray brown, spotted with dark scales; antemedial line distinct; median area red brown; dark gray shade from upper projection of antemedial line in discal cell; outer one-third of median area darker than inner two-thirds, but not on upper one-fourth of postmedial line; discal dot with two small black spots in vague, dull white area; subterminal area gray, mottled with light and dark gray bands. Hindwing dark gray brown; subterminal area light gray in anal angle; postmedial line even, thin. Below even, dark gray brown, all maculation vague; forewing lighter brown on costa near postmedial line.

Male genitalia (figs. 833, 833a).--Shape of aedeagus is characteristic.

Female.--Unknown.

Type.--Warren described geminipuncta from four males from "Huancabamba, Cerro de Pasco, Peru." The male with Warren's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--This species is superficially closest to vulpecula, but the male genitalia do not indicate that they are closely related. I have placed geminipuncta next to acopa and ochriplaga based on the pectinate antennae, although this is not a particular character in this genus.

Specimens examined.--6 males.

PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.

Pero obtusaria Prout

Pero obtusaria Prout, 1928:58.

Male (fig. 379).--Antennae simple. Legs dull dark brown, tibiae cream colored at tip. Forewing dull dark brown; basal area lighter than median area, but not clearly set off from it; outer third of median area distinctly darker than inner two-thirds; discal dot small, black; postmedial line slightly indented on veins, each indentation with small white spot; subterminal area lighter along postmedial line, darker toward outer margin. Hindwing dull, brown, darker toward inner margin; postmedial line a dull white band, edged with brown toward inner margin. Below postmedial line of forewing a dull white band toward costa, but becoming obscure toward middle of wing; discal dot of forewing a dull white blotch; postmedial line of hindwing vague, dark brown edged with dull white; discal dot black.

Male genitalia (figs. 834, 834a).--Structures of valve, subscaphium, and uncus are characteristic.

Male eighth tergite and sternite (figs. 851, 852).

Female.--Similar to male, but all maculation vague; costa of forewing in two known females yellow.

Female genitalia.--Unknown.

Type.--Prout described obtusaria from a single male from "Peru: Matucana-Lima districts." It is in the British Museum of Natural History.

Discussion.--This is the most uniform appearing species of this complex, but is known only from a few rubbed specimens from western Peru.

Specimens examined.--4 males and 2 females, December.

PERU. Lima: Callao; Huacho; Lima-Matucana.

Pero consimilis (Warren), NEW COMBINATION

Meticulodes consimilis Warren, 1907:311.
Meticulodes hoffmannsi Warren, 1907:312. NEW SYNONYMY.

Male (fig. 380).--Legs dark gray brown; inner faces of legs lighter. Forewing gray, gray brown, or brown; basal area gray brown scaled with black, rough appearing; median area gray brown, darker toward inner margin and along postmedial line; discal dot with two small black dots or absent; postmedial line with small teeth on veins; subterminal area with dark band following postmedial line and another in about middle of area. Hindwing dull white, scaled with dark brown, lightest toward base and costa; postmedial line brown, followed by obscure light band. Below dull white, flecked with dark gray brown; postmedial lines of both wings brown; costa of forewing and hindwing orange brown.

Male genitalia (figs. 835, 835a).--Shapes of subscaphium and uncus are characteristic.

Male eighth tergite and sternite (figs. 853, 854).

Female.--Unknown.

Variation.--There seem to be roughly two forms in consimilis, one brown and one gray. The type of consimilis is a soft gray with the median area much darker than the rest of the forewing, but most gray specimens are darker, rougher appearing, and flecked with dark scales. Brown specimens also vary in the amount of dark flecking of the forewing. The type of hoffmannsi is the brown form. The discal dot of the forewing above varies in size from two distinct black dots to almost absent or absent. The two males from Huancabamba, Peru, have the costa of the forewing above yellow, but this is not characteristic of the species from other areas.

Types.--Warren described consimilis from a male from Cushi, Huánuco, Peru. The male with Warren's type label is designated as the lectotype (there is doubt as to how many specimens Warren had). It is in the British Museum of Natural History. The type of hoffmannsi is a single male from Cushi, Huánuco, Peru, and is also in the British Museum of Natural History.

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Discussion.--Pero consimilis is one of the most common species of the complex, but its distribution is erratic. It is a variable species, but the male genitalia are characteristic and can usually be seen by brushing away the scales from the tip of the abdomen. The yellow costa of the forewing is not common and is known only in specimens from Huancabamba, Pasco, Peru.

Specimens examined.--16 males, all year.

ECUADOR. Chimborazo: Dos Puentes, 1700 ft.; Huigra, 7000 ft.; not located: Hacienda Cayendeled, Rio Bamba, 4200 ft. PERU. Amazonas: River Tabaconas, 6000 ft.; Huánuco: Cushi, 1900 m.; Junin: Chanchamayo, 1000 m.; Chanchamayo, 2000 m.; Huacapistana, 1800 m.; Lima: Lima, 500 ft.; Lima; Pasco: Huancabamba, Cerro de Pasco.

Pero galea Poole, NEW SPECIES

Male (fig. 381).--Forewing similar to that of consimilis, but maculation less distinct and wing more heavily scaled with dark gray; antemedial line indistinct; discal dot present, double. Hindwing almost uniformly scaled with dark gray. Below without orange brown along costa of forewing and hindwing; color of forewing and hindwing almost uniform, not lighter toward inner margin.

Male genitalia (figs. 836, 836a).--Shapes of subscaphium and uncus are characteristic.

Male eighth tergite and sternite.--As in consimilis.

Female (fig. 382).--Similar to male, but darker; maculation of forewing stronger than in male; well-marked series of dark dots along outer margins of forewing and hindwing; dark gray brown below with postmedial lines of forewing and hindwing brown followed by light band; white dots along outer margin of both wings below.

Female genitalia (fig. 1094).

Types.--Holotype: Male, Huigra, Chimborazo, Ecuador, 4000 ft., Dec. 28, 1928, in U.S. National Museum. Allotype: Female, Guallabamba River, Pichincha, Ecuador, 1650 m., in American Museum of Natural History.

Discussion.--The female listed may not be correctly associated with the male, but it resembles it. Both this species and consimilis have been taken at Huigra, Ecuador, but consimilis was taken at 7,000, not 4,000 feet elevation.

Specimens examined.--3 males and 1 female, June and December.

ECUADOR. Chimborazo: Huigra, 4000 ft.; Pichincha: Guallabamba River, N.E. Quito. PERU. Amazonas: River Tabaconas, 6000 ft.

Pero erubescens (Maassen), NEW COMBINATION

Posphila erubescens Maassen, 1890: pl. 7, fig. 12. Azelina terrenaria Dognin, 1892:107. NEW SYNONYMY. Meticulodes rufaria Dognin, 1906:213. NEW SYNONYMY. Azelina mithras Oberthür, 1912:297. NEW SYNONYMY.

Male (figs. 383, 384).--Legs concolorous with remainder of body except cream-colored tarsi. Forewing brown to black gray; basal area grayish, flecked with dark scales; median area brown or black gray, sometimes costal third yellow; discal dot single or double, but never large; sometimes either a dark line paralleling postmedial line or outer one-fifth of median area darker than inner four-fifths; subterminal area usually grayish, in some specimens brownish; dark band paralleling postmedial line and another in about middle of subterminal area; series of black dots along outer margin. Hindwing gray black, some specimens brownish; wing marked with either yellow or brown along inner margin; postmedial line dull white; series of black dots along outer margin. Below brownish or gray, suffused with dark scales; postmedial lines of forewing and hindwing dark.

Male genitalia (figs. 837, 837a).--Shape of subscaphium will identify this species.

Male eighth tergite and sternite (figs. 857, 858).

Female (fig. 385).

Female genitalia (fig. 1095).

Variation.--This is a variable species, particularly in color. Some specimens are brown, but others are gray black. Many of the gray-black males have the costal one-third of the median area of the forewing above yellow, but none of the brown ones do. Some specimens have the subterminal area conspicuously lighter than the median area, although this appears to be limited to the gray specimens. The discal dot may be present or absent, with all degrees of development in between.

Types.--Maassen described erubescens from two males, one dark and one light, in the Zoologisches Institut und Museum der Humboldt-Universität, Berlin. The light male figured on plate 7 is designated as the lectotype. Azelina terrenaria was based on three males from Loja, Ecuador. Two of the males have the "type" in parentheses, but the third male does not. This male has U.S.N.M. type label 32398 and is designated as the lectotype. Meticulodes rufaria was described from a "paire," the male from Angasmarca, Peru, and the female from "Trujillo," Peru. The male is designated as the lectotype and is in the U.S. National Museum. The female is probably the female of the next species. The type of mithras is a female from "Hacienda Cayandeled, Bamba, Ecuador" and is in the British Museum of Natural History.

Discussion.--Posphila erubescens was described as a noctuid. Pero erubescens is probably common where found and is variable.

Specimens examined.--18 males and 1 female, July.

ECUADOR. Loja: Environs de Loja; Pichincha: Pululangua, 2500-2700 m.; not located: Hacienda Cayandeled, Rio Bamba. PERU. Not located: Angasmarca. BOLIVIA. Cochabamba.

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Pero matucana Poole, NEW SPECIES

Male (fig. 386).--Legs brown; tarsi and tips of tibiae cream colored. Forewing brown, flecked with dark brown scales; basal area brown, sometimes speckled with few darker scales; median area brown, darker in indentation of antemedial line and along postmedial line; discal dot double, conspicuous; dark band following postmedial line; postmedial line dark, wavy, particularly toward inner margin; subterminal area brown. Hindwing light brown, flecked with dark scales; postmedial line dark and prominent; discal dot present, although not conspicuous; wing lightest toward base. Below brown, light toward inner margin of both wings; postmedial lines of forewing and hindwing dark brown; discal dot absent in forewing, black and round in hindwing.

Male genitalia (figs. 838, 838a).--Shape of subscaphium is characteristic.

Male eighth tergite and sternite (figs. 855, 856).

Female (fig. 387).--Forewing uniform brown; veins in subterminal area accented. Hindwing postmedial line not conspicuous. Below not conspicuously lighter toward inner margin of forewing and hindwing.

Female genitalia (fig. 1096).

Types.--Holotype: Male, Verrugas, [Lima], Peru, April 14, 1928, Shannon, in U.S. National Museum. Paratype: 1 male from Matucana, [Lima], Peru, in Cornell University collection.

Discussion.--The only known female is the female type of rufaria Dognin, and it is only tentatively associated with this species. I, therefore, have not made it an allotype.

Specimens examined.--2 males and 1 female, April and May.

PERU. La Libertad: Trujillo; Lima: Matucana; Verrugas.

Pero cinnamomina Prout

Pero cinnamomina Prout, 1928:60.

Male.--Palpi light brown. Legs light brown. Forewing light brown to yellow brown; basal area slightly darker than subterminal area; antemedial line indistinct, but followed by dark brown scaling; median area concolorous with subterminal area in middle and along costa, but darker toward inner margin and postmedial line; discal dot with two small spots; postmedial line cut where veins pass, followed by thin gray-brown line; brown shade in middle of subterminal area and series of black dots along outer margin. Hindwing light yellow brown; postmedial line thin, brown; inner margin shaded with brown scales, but remainder of wing very light. Below light brown; postmedial lines of both forewing and hindwing dull brown; discal dots of both wings indistinct, dull brown lines.

Male genitalia (figs. 839, 839a).

Female (fig. 388).--Similar to male.

Female genitalia (fig. 1097).

Type.--Prout described this species from several specimens, but he designated the type as the male from "Lima-Matucana districts." This male is in the British Museum of Natural History. The remaining males are specimens of matucana.

Specimens examined.--1 male and 1 female.

PERU. Lima: Lima-Chanchamayo; Lima-Matucana.

Pero atridisca Dognin

Pero atridisca Dognin, 1906:213.

Male (fig. 389).--Palpi brown gray. Legs gray. Forewing basal area not well set off from median area (unique type is badly rubbed); median area gray, speckled with dark scales, and outer one-third darker than inner two-thirds; median area brown from inner margin to M_1; discal dot a small black spot; postmedial line dark, incurved on M_1; subterminal area gray, darkest near median veins; two vague dark bands running from medial veins toward inner margin. Hindwing light gray, speckled with brown scales in subterminal area; postmedial line brown, but not prominent and discal dot of lower surface showing through. Below light gray, flecked with few brown scales; discal dot of hindwing large, black, and prominent.

Male genitalia (figs. 840, 840a).--Subscaphium and juxta are characteristic.

Male eighth tergite and sternite (figs. 859, 860).

Female.--Unknown.

Type.--Pero atridisca was described from a single male from "Angasmarca, Peru," in the U.S. National Museum.

Discussion.--Pero atridisca is a distinctive species.

Specimen examined.--1 male.

PERU. Not located: Angasmarca.

barbarata Species Complex

This is a troublesome complex, and the treatment given here is probably inadequate because of a lack of material. All the species except torna are represented by only a few specimens, usually only a unique male. Unfortunately the variation in torna covers the superficial appearance of almost all the other species, and probably they are equally variable. The only satisfactory way to identify any of them is by the male genitalia. Geographical information may be useful if the picture of local or endemic species holds true after more material has been collected. If these species are endemic or local, probably some remain to be discovered. The data on most specimens are inadequate, but the members of the complex possibly come from drier

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localities than most other species of Pero in South America.

This complex includes corda through rata.

Pero corda Poole, NEW SPECIES

Male (fig. 390).—Antennae simple, white dorsally. Legs brown toward base, cream colored toward distal end. Forewing dark brown; basal area brown, with dark scales; median area darker than basal area, light along costa and between discal dot and postmedial line, darker toward postmedial line, antemedial line, and inner margin; outer one-fifth of median area darker than remainder of area; subterminal area brown with vague dark shade paralleling postmedial line and even vaguer dark shade toward middle. Hindwing dark brown; postmedial line vague; subterminal area light in anal angle. Below almost uniformly dark brown; postmedial lines of both forewing and hindwing vague; inner margin of hindwing light.

Male genitalia (figs. 841, 841a).--Shapes of aedeagus, subscaphium, and juxta will identify this species.

Male eighth sternite.—As in rata.

Female.—Unknown.

Type.—Holotype: Male, Pacho, [Cundinamarca], Colombia, 2200 meters, Fassl, in U.S. National Museum.

Discussion.—Pero corda and the next species are closely related, but perhaps not specifically distinct if the male genitalia are used as a criterion. The only significant difference between the two species is the shape of the aedeagus. Superficially they are very distinct. Pero corda is uniform brown, but cola is black with a distinct yellow spot between the discal dot and postmedial line of the forewing above. Unfortunately the two species are known only from their types, and the type locality of cola is given only as "Colombie." Until more specimens are available, I have decided to treat them as two valid species.

Specimen examined.—1 male.

COLOMBIA. Cundinamarca: Pacho, 2200 m.

Pero cola Poole, NEW SPECIES

Male (fig. 391).—Antennae simple, white dorsally. Legs with tarsi cream colored; tibiae and femora black brown, spotted with cream. Forewing black brown; basal area black brown, overlain with dark scales; median area dark along postmedial line and antemedial line; discal dot double; distinct yellow spot in indentation of postmedial line between R_4 and M_1; subterminal area with dark shade paralleling postmedial line and another in middle of area; dark band running from costa at about middle of subterminal area to about one-fourth way down outer margin. Hindwing dark black brown with obscure postmedial line; subterminal area gray in anal angle and with dark band paralleling postmedial line filling area past anal angle. Below dull dark brown; costa of forewing, particularly near postmedial line, dull light brown; gray blotch along outer margin; hindwing grayish, heavily scaled with black brown; hindwing light brown in upper half of subterminal area, but heavily scaled with dark flecks there also; postmedial line of hindwing wavy, white, accented with dark brown on its inner side in anal angle.

Male genitalia (fig. 842).--Aedeagus will distinguish this species from corda, but is otherwise identical with it.

Male eighth sternite.--As in rata.

Female.--Unknown.

Type.--Holotype: Male, "Colombie," Fassl, in U.S. National Museum.

Discussion.--Pero cola is easily distinguished from all other species in this complex by its dark black-brown coloration and the yellow dot between the postmedial line and discal dot of the forewing above. Although the type locality is given only as "Colombie," this specimen probably came from either the department of Tolima or the department of Cundinamarca as most of Fassl's collecting was done in these two areas of Colombia. Pero cola is perhaps not specifically distinct from corda (see discussion under corda).

Specimen examined.--1 male.

COLOMBIA. No specific locality: Colombie.

Pero barbarata (Dognin), NEW COMBINATION

Azelina barbarata Dognin, 1892:186.

Male (fig. 392).--Legs with tarsi white to cream colored. Forewing brown to dark brown; basal area brown, overlain with dark brown scales; antemedial line shaded with dark brown on costal edge; median area brown, overlain with dark scales, outer one-fourth darker than inner three-fourths; discal dot double, but two halves connected; light cream to yellow spot in indentation of postmedial line opposite discal dot; dark band following postmedial line, more or less filling in indentations; middle of subterminal area lighter than either costa or outer margin. Hindwing brown; postmedial line fine, dark brown, followed by thin light band, preceded by dark brown band strongest toward inner margin; subterminal area dark toward costa and along postmedial line. Below cream colored to light brown, but heavily scaled with dark brown; upper half of subterminal area of forewing dark with fine central area of light brown; lower half of subterminal area light brown to dull cream; costa of forewing light brown, even slightly orange; postmedial line of hindwing heavy brown in anal angle; inner margin of hindwing cream colored, scaled with dark brown, remainder of wing brown.

Male genitalia (figs. 843, 843a).--Shapes of aedeagus and juxta are characteristic.

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Male eighth tergite and sternite (figs. 861, 862).

Female.--Similar to male.

Female genitalia (fig. 1098).

Variation.--The color varies from dark brown to yellow brown. The size of the yellow dot in the indentation of the postmedial line of the forewing above is also variable.

Type.--Dognin described this species from five specimens (four males and one female) from "Santa Barbara." The male with U.S.N.M. type label 32382 and with the male genitalia on slide R.W.P. 10556 is designated as the lectotype.

Discussion.--Pero barbarata is superficially close to the following four species, but the male genitalia are distinctive.

Specimens examined.--4 males and 2 females.

ECUADOR. Loja: Environs de Loja; not located: Santa Barbara.

Pero angasmarca Poole, NEW SPECIES

Male (fig. 393).--Forewing similar to that of barbarata, but more uniform appearing; projection of antemedial line in discal cell truncate, not rounded as in barbarata (based on two specimens); yellow spot in indentation of postmedial line opposite discal dot not well developed, divided by dark line paralleling postmedial line. Below coloration more uniform appearing than in barbarata.

Male genitalia (figs. 844, 844a).--Characterized by shapes of costal fold and subscaphium.

Male eighth sternite and tergite (figs. 863, 864).

Female.--Unknown.

Types.--Holotype: Male, Angasmarca, Peru, in U.S. National Museum. Paratype: 1 male from type locality in British Museum of Natural History.

Specimens examined.--3 males.

PERU. Not located: Angasmarca. ECUADOR. Not located: Hacienda Cayandeled, Rio Bamba, 4200 ft.

Pero torna Poole, NEW SPECIES

Male (fig. 394).--Forewing similar to that of barbarata, but very variable.

Male genitalia (figs. 845, 845a).--Spine-shaped median process of valve is characteristic.

Male eighth tergite and sternite (figs. 865, 866).

Female.--Unknown.

Variation.--This species is variable and has forms resembling barbarata, tabacona, rata, and angasmarca. Some specimens are brown, others black brown. The strength and clarity of maculation also vary.

Types.--Holotype: Male, Torne, [Tolima], Colombia, 1-15 Febr., 07, Paine and Brinkley, in British Museum of Natural History. Paratypes: 12 males from type locality in British Museum of Natural History.

Discussion.--The variation in this species covers the superficial appearance of almost all the other species in this complex and suggests that the descriptions of these species, based in many cases on unique types, will be found to be inadequate when more specimens are known.

Specimens examined.--13 males, August.

COLOMBIA. Tolima: Torne.

Pero tabacona Poole, NEW SPECIES

Male (fig. 395).--Forewing almost identical to that of barbarata, but darker, slightly rougher appearing. Hindwing black brown, not brown. Below dull black brown, not brown.

Male genitalia (figs. 846, 846a).--Shapes of aedeagus, valve, and subscaphium characterize this species.

Male eighth tergite and sternite (figs. 867, 868).

Female.--Unknown.

Type.--Holotype: Male, River Tabaconas, [Amazonas], Peru, 6000 ft., in British Museum of Natural History.

Discussion.--The male genitalia of tabacona indicate a close relationship with the following species, but there are small differences in the shapes of the subscaphium and aedeagus. Superficially (based on few specimens) they are distinct, and until more material of the two is available, I am treating them as separate species.

Specimen examined.--1 male.

PERU. Amazonas: River Tabaconas, 6000 ft.

Pero rata Poole, NEW SPECIES

Male (fig. 396).--Forewing almost identical to that of barbarata; yellow spot in indentation of postmedial line not as well developed. Hindwing base light brown scaled with dark scales, not uniform brown.

Male genitalia (figs. 847, 847a).--Shapes of subscaphium and aedeagus will distinguish this species from tabacona.

Male eighth tergite and sternite (figs. 869, 870).

Female.--Unknown.

Types.--Holotype: Male, Trujillo, [La Libertad], Peru, in U.S. National Museum. Paratypes: 2 males from Angasmarca, Peru, in U.S. National Museum.

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Discussion.--This is possibly a race of the preceding species, but there are slight differences in the subscaphium, aedeagus, and eighth abdominal segment.

Specimens examined.--3 males.

PERU. La Libertad: Trujillo; not located: Angasmarca.

Pero gota Poole, NEW SPECIES

Male (fig. 397).--Forewing in only specimen rubbed, but brown, poorly marked; median area darker than either basal or subterminal areas, slightly orangish; discal dot double, not connected; median area not darker in outer one-fifth than in inner four-fifths; thin band following postmedial line in subterminal area and another in middle of subterminal area. Hindwing brown, moderately uniform appearing; discal dot present, but not sharp; postmedial line brown, followed by vague light band. Below very rubbed, but postmedial line in anal angle of hindwing dark brown followed by conspicuous light cream-colored band.

Male genitalia (figs. 848, 848a).--Shape of subscaphium is characteristic.

Male eighth tergite and sternite (figs. 871, 872).

Female.--Unknown.

Type.--Holotype: Male, Bogotá, [Cundinamarca], Colombia, 2800-3200 m., Fassl, in U.S. National Museum.

Specimen examined.--1 male.

COLOMBIA. Cundinamarca: Bogota, 2800-3200 m.

Pero gamuza (Dognin), NEW COMBINATION

Azelina gamuza Dognin, 1894:242.

Male (fig. 398).--Palpi brown. Legs brown; tibial spurs black and white banded. Forewing brown on gray; basal area gray, scaled with dark brown; antemedial line obscure; median area brown, becoming gray on costa; discal dot absent; postmedial line white, contrasting with remainder of wing; subterminal area gray, only slightly scaled with brown; series of black dots along outer margin. Hindwing almost uniform brown with series of black dots along outer margin. Below rich brown over gray; all markings absent except discal dot of hindwing and series of dots along outer margin of forewing and hindwing.

Male genitalia (figs. 849, 849a).--Aedeagus is characteristic.

Male eighth tergite and sternite (figs. 876, 898).

Female.--Unknown.

Type.--Described from single male from "El Monje, pres Loja, Equateur" in U.S. National Museum.

Discussion.--This is an extremely distinctive species, and its appearance is unlike any other species in the genus. The male genitalia are also highly modified, particularly the aedeagus. I have placed it here following the barbarata complex on the basis of the eighth sternite of the male.

Specimen examined.--1 male.

ECUADOR. Loja: El Monje pres Loja.

Pero sinalba Poole, NEW SPECIES

Male (fig. 399).--Legs with inner faces cream colored. Forewing gray brown; basal area brown, gray toward costa, browner toward inner margin; median area darkest along inner margin and postmedial line; discal dot a small black spot; subterminal area light gray brown, much lighter than median area, grayer along postmedial line; series of black dots along outer margin. Hindwing dark gray brown, lighter toward outer margin; postmedial line a dull white line, marked with brown in anal angle. Below dark brown scaled with gray along postmedial line of hindwing and inner margin; discal dot of hindwing black in gray area; inner half of subterminal area brown.

Male genitalia (figs. 850, 850a).--Shapes of aedeagus, subscaphium, and uncus are characteristic.

Female.--Unknown.

Type.--Holotype: Male, Huacapistana, Junin, Peru, 1800 m., July 27-30, 1965, P. and B. Wygodzinsky, in American Museum of Natural History.

Discussion.--Pero sinalba is a uniform brown and distinct from anything else in the genus.

Specimen examined.--1 male, July.

PERU. Junin: Huacapistana, 1800 m.

Pero vulpecula (Dognin), NEW COMBINATION

Azelina vulpecula Dognin, 1904:369.

Male (fig. 400).--Antennae pectinate. Palpi dark brown. Legs with femora brown; tibiae and tarsi cream colored. Forewing basal area gray to brown, scaled with dark brown; antemedial line brown; median area brown to yellow brown, usually with yellow streak in lower half of discal cell; discal dot with two small black spots, upper usually stronger than lower; median area in some specimens scaled with black streaks; median area usually darkest along postmedial line; subterminal area gray brown to brown with vague dark band in middle paralleling postmedial line. Hindwing dark gray brown; postmedial line present, but weak; subterminal area brown in anal angle, but otherwise concolorous with remainder of wing. Below gray brown; costa of forewing to halfway across subterminal area orange brown; inner margin and postmedial line in anal angle of hindwing scaled with cream color. Abdomen scaled with white between segments ventrally.

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Male genitalia (figs. 873, 873a).--Shape of aedeagus will identify this species.

Male eighth tergite and sternite (figs. 899, 900).

Female.--Unknown.

Variation.--One specimen from Huancabamba, Peru, is tan, not gray as most of the specimens. Another is almost uniform brown, darker than the above specimen, but again without the gray of the other specimens. The amount of black streaking in the forewing above varies from specimen to specimen.

Type.--This species was described from two males from "Huancabamba, Perou." The male bearing Dognin's type label and U.S.N.M. type number 32406 is designated as the lectotype. This specimen lacks its abdomen.

Discussion.--The soft coloration and pectinate antennae of vulpecula are seen also in geminipuncta and acopa; all three species are found at high elevations. These two characters are possibly due to convergent evolution to a cold climate (possibly paramo), although there is no direct evidence to support this hypothesis.

Specimens examined.--22 males.

PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba; no specific locality: Peru.

Pero lara Poole, NEW SPECIES

Male (fig. 401).--Legs with tarsi and one face of tibiae cream colored; rest of legs black brown to brown. Forewing variable in color, brown to black brown; basal area gray brown, speckled with dark scales, darkest along inner margin; median area brown to black brown, costal one-fourth usually yellowish to yellow brown; discal dot with two black dots in dull white area; subterminal area gray brown with dark band paralleling middle of postmedial line; another band in middle of subterminal area setting off darker outer margin. Hindwing dull brown to dull black with brownish fringe. Below with costal half of both wings brown to brown black, inner margins of both wings cream colored, scaled with black; postmedial line of hindwing brown, wavy, accented with black in anal angle; discal dot of forewing absent; discal dot of hindwing black, but only moderately developed.

Male genitalia (figs. 874, 874a).--Shape of uncus will distinguish lara from variaria.

Male eighth tergite and sternite.--Similar to those of variaria.

Female (fig. 402).--Forewing similar to that of male, but usually more uniformly colored than in male; basal and subterminal areas not lighter than median area; yellow of costa not as pronounced as in males.

Female genitalia (fig. 1099).

Variation.--The markings in lara are fairly consistent, but the color of the wings varies greatly from brown with a yellowish tint to black brown. Fresh specimens are generally darker than faded ones.

Types.--Holotype: Male, Terepaima, 10 km. S. Barquisimeto, Lara, Venezuela, June 30, 1967, R.W. Poole, in U.S. National Museum. Allotype: Female, Pacho, [Cundinamarca], Colombia, in U.S. National Museum. Paratypes: 7 males from Finca San Pablo, 3 km. N. Alban, Cundinamarca, Colombia, in American Museum of Natural History; Mérida, Venezuela, 8 males in British Museum of Natural History, 2 males and 3 females in U.S. National Museum, and 3 males in Cornell University collection.

Discussion.--Both the male genitalia and superficial appearance indicate a close relationship between this species and variaria. The type specimen was taken in a cloud forest at about 3,500 feet. The occurrence of this species in the northern Andes and of the next species in Jamaica is not paralleled in the genus Pero.

Specimens examined.--34 males and 13 females, May-December.

VENEZUELA. Federal District: Caracas; Lara: Terepaima, 10 km. S. Barquisimeto; Mérida: Walle, 2200 m., Merida; Yaracuy: Aroa. COLOMBIA. Cauca: Popayan; Cundinamarca: Finca San Pablo, 3 km. N. Alban, 1800 m.; Pacho, 2200 m.; Santander: Cucuta; Vaupés: Ob. Rio Negro, 800 m.; not located: San Antonio, 5000 ft.; San Cajateno, 8000 ft.; no specific locality: Colombia.

Pero variaria (Walker)

Azelina variaria Walker, 1860:257.
Azelina jamaicensis Schaus, 1901:181.

Male (fig. 403).--Superficially identical with lara, but slightly larger.

Male genitalia (figs. 875, 875a).--Shape of uncus will separate this species from lara.

Male tergite and sternite (figs. 901, 902).

Female (fig. 404).--Identical with female of lara, but slightly larger.

Female genitalia (fig. 1100).

Variation.--The color is variable in the same way as in lara, but perhaps more so. The two males from the Blue Mountains are light gray, and the black scales of the forewing strongly contrast with the background color.

Types.--Walker described variaria from a single female without locality data. This specimen is in the British Museum of Natural History. Schaus based jamaicensis on a male from Newcastle, Jamaica, in the U.S. National Museum.

Discussion.--Pero variaria is known only from Jamaica. There are specimens labeled "British

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Guiana," "Chiriqui," and "S. America," but all are in the same handwriting, and there are other specimens labeled Jamaica in the same handwriting. These other localities are undoubtedly false. The species is common on Jamaica.

Specimens examined.--115 males and 51 females, July.

JAMAICA. Chinchona; Blue Mountains, 4000 ft.; Hermitage Reser.; Portland Parish, Hardware Gap, Green Hills, 4800 ft.; Newcastle; St. Andrews Parish, Irishtown; St. Andrews Parish, Newcastle; St. Andrews Parish, Yallahs River, Chestervale; Jamaica.

Pero attagena (Dognin), NEW COMBINATION

Azelina attagena Dognin, 1892:186.

Female (fig. 405).--Legs with femora dark gray brown; tibiae and tarsi cream colored, spotted with dark gray brown. Hindwing dark gray brown; basal area light toward costa; median area dark along postmedial line and between two projections of antemedial line; discal dot double, black, usually in light area; postmedial line finely crenulate; outer half of subterminal area darker than inner half, separated from inner half by violet-brown band; dark band following postmedial line. Hindwing dark gray brown; postmedial line dark, followed by light band. Below discal dot of forewing a white spot; inner half of forewing lighter than costal half; discal dot of hindwing large, black; inner margin of hindwing white, spotted with violet brown; postmedial line dark brown followed by dull white band.

Female genitalia (fig. 1101).

Male.--Unknown.

Variation.--The type of this species is old and has faded to brown without any of the gray or violet tints of the fresh specimen.

Type.--Described from a single female from "Environs de Loja" in the U.S. National Museum.

Discussion.--This species is known only from two females, and the genitalia are similar to those of lara and variaria. Pero attagena is also superficially similar to those two species.

Specimens examined.--2 females, July.

PERU. Junin: Huacapistana, 1800 m. ECUADOR. Loja: Environs de Loja.

GROUP 16

This group is easily identified by its characteristic yellow-brown appearance, the long wings, and the pale streak through the cell of the forewing from the base to the apex of the wing. Pero longisecta has this streak much reduced, but seems related on the basis of the male genitalia. Three closely related species--beatricaria, pincha, and tricaria--occur in the Andes, but spongiata occurs all over South and Central America. Pero longisecta is known only from southern Brazil. Pero beatricaria, pincha, and tricarai are superficially close and difficult to identify unless one is acquainted with all the species and the slight differences separating them. However, the male and female genitalia are different and should be used if positive identification is needed. A key to the five species of the group based on superficial appearance is given here.

1. Subterminal area of forewing with red-brown or gray-violet patch following lower half of postmedial line 2

   Subterminal area of forewing without patch following lower half of postmedial line ..... longisecta

2. Patch in subterminal area of forewing following lower half of postmedial line red violet to red brown 3

   Patch in subterminal area of forewing following lower half of postmedial line gray violet ..... spongiata

3. Patch in subterminal area of forewing following lower half of postmedial line bulging into median area and wide at this point; not appearing golden or heavily striate with brown .... pincha and beatricaria

   Patch in subterminal area of forewing following lower half of postmedial line not bulging into median area nor wide at any point; appearing slightly golden and heavily striate with brown ..... tricaria

Pero beatricaria (Oberthür), NEW COMBINATION

Azelina beatricaria Oberthür, 1883:28.

Male (fig. 406).--Legs yellow brown, flecked with gray brown. Forewing yellow brown flecked with dark brown, with light streak through cell from base of wing to outer margin; costal margin and lower two-thirds of wing dark; basal area darkest in lower half; antemedial line wide and light yellow brown, followed by dark shade; discal dot absent; postmedial line preceded by dark brown shade, strongest in lower part of median area; postmedial line followed by wide band, gray violet along postmedial line changing to red brown on outer edge of band; toward costa this band absent; subterminal area heavily flecked with dark brown and some gray. Hindwing light cream yellow, slightly flecked with dark brown, but usually little; postmedial line brown in anal angle, followed by red-brown patch. Below forewing orange along costa and with some dark brown along outer margin, but remainder dull white; upper half and anal angle of hindwing orange, remainder yellow-cream color; postmedial line inconspicuous. Abdomen light brown, tip dark brown.

Male genitalia (figs. 877, 877a).--Shape of aedeagus is characteristic.

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Female.--Slightly larger and darker than male.

Female genitalia (fig. 1102).

Variation.--Specimens from Peru are a little darker than those from Bolivia.

Type.--Described from a single male from "Tambillo, Peru," in the British Museum of Natural History.

Discussion.--Pero beatricaria is close to pincha and tricaria, but easily identified by the male genitalia.

Specimens examined.--33 males and 1 female, February, July, and August.

PERU. Pasco: Huancabamba, 5-6000 ft.; Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba; Oxapampa; Puno: Agualani, 9000 ft.; Oconeque, 7000 ft.; Tinguri, 3400 ft.; not located: Chaupe, 4000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; La Paz: R. Tanampaya; no specific locality: Bolivia.

Pero pincha Poole, NEW SPECIES

Male (fig. 407).--Superficially identical with beatricaria; genitalia should be checked for positive identification.

Male genitalia (figs. 878, 878a).--Shapes of aedeagus and uncus are characteristic.

Female.--Identical with female of beatricaria.

Female genitalia (fig. 1103).

Variation.--Some specimens are slightly darker than others.

Types.--Holotype: Male, Monte Tolima, [Tolima], 3200 m., Colombia, Fassl, in British Museum of Natural History. Allotype: Female, Tochesito, [Tolima], 3000 m., Colombia, in U.S. National Museum. Paratypes: 4 males from type locality in British Museum of Natural History.

Discussion.--Pero pincha is most common in the Department of Tolima, Colombia, although it has also been collected in Ecuador. Superficially pincha and beatricaria are identical, but since they appear to be geographically separated, they can be sorted by locality.

Specimens examined.--9 males and 2 females, all year.

COLOMBIA. Cundinarmarca: Pacho, 2200 m.; Tolima: Canon del Tolima, 2700 m.; Monte Tolima, 3200 m.; Tochesito, Quindiu, 3000 m.; Torne, Cauca Valley. ECUADOR. Loja: Environs de Loja; Pichincha: 50 km. W. Quito, on road to Santo Domingo, 2400 m.

Pero tricaria Poole, NEW SPECIES

Male (fig. 408).--In appearance very much like beatricaria. Forewing yellower than that of beatricaria, almost golden; patch following postmedial line in lower half of forewing narrower and more red brown; wing conspicuously striate with dark brown; maculation less distinct than in beatricaria. Below orange limited to upper part of subterminal areas of both wings, not found along costa of forewing or inner margin of hindwing.

Male genitalia (figs. 879, 879a).--Shape of aedeagus is characteristic.

Female.--Similar to male.

Female genitalia (fig. 1104).

Variation.--Little if any.

Types.--Holotype: Male, La Croya, Rio Inambari, [Puno], Peru, in U.S. National Museum. Allotype: Female, Santo Domingo, [Puno], Peru, in U.S. National Museum. Paratypes: 27 males from type locality in British Museum of Natural History; 5 males from type locality in Cornell University collection; 3 males from type locality in U.S. National Museum.

Discussion.--Pero tricaria has been collected commonly in the Department of Puno in southern Peru, but it occurs elsewhere in the Andes only sporadically.

Specimens examined.--62 males and 1 female, all year.

COLOMBIA. Antioquia: Mesopotamia, 5000 ft.; Cundinamarca: Pacho, 1200 m.; Tolima: Torne, Cauca Valley. ECUADOR. Chimborazo: Dos Puentes, 1700 ft., kil. 99. PERU. Amazonas: Charape River, Tabaconas, 4000 ft.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Agualani, 9000 ft.; La Croya, 3100 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft. BOLIVIA. Cochabamba: Yungas del Palmar, 2000 m.

Pero spongiata (Guenée), NEW COMBINATION

Meticulodes spongiata Guenée, 1857:193.
Meticulodes triplilunata Prout, 1911:710.

Male (fig. 409).--Forewing light yellow brown; pattern as in beatricaria; band following postmedial line a light gray violet, not red violet as in beatricaria, well defined; conspicuous black shade along outer margin in bottom half of subterminal area; teeth of lower half of postmedial line sharp and conspicuous. Hindwing postmedial line wide, white, and well defined in anal angle; patch in anal angle black, not red brown. Below forewing and hindwing lack orange of beatricaria; upper half of forewing dark, lower half dull white; hindwing with diffuse cream-colored postmedial line; subterminal area of hindwing brown except black anal angle. Abdomen slightly tipped with black.

Male genitalia (figs. 880, 880a).--Shapes of juxta and aedeagus are characteristic.

Female.--Similar to male, but slightly larger.

Female genitalia (fig. 1105).--Has bulbous hood fitting over ostium not shown in drawing.

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Variation.--There are some slight differences in the darkness of the hindwing.

Types.--Guenée described spongiata from two males. The specimen marked "Ex Museo Arch. Guenee" and "Ex Typicalibus Specimenibus" and with the abdomen intact is designated as the lectotype. This specimen is in the British Museum of Natural History. Prout described triplilunata from a single male from Naranjito, Rio Dagua, [Valle del Cauca], Colombia, in the British Museum of Natural History.

Discussion.--Pero spongiata is widely distributed all over tropical America, although it is never common.

Specimens examined.--101 males and 15 females, all year.

COSTA RICA. Cartago: Juan Vinas; no specific locality: Costa Rica. PANAMA. Not located: Lino, 800 m. BRAZIL. Paraná: Castro, 950 m.; Rio de Janeiro: Corcovado Forest, Rio de Janeiro; Santa Catarina: Blumenau; Hansa Humboldt, 60 m.; Jaragua do Sul; Neu Bremen, Blumenau; Neu Bremen; Rio Laeiss, Blumenau; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Alto da Serra, Santos, 800 m.; Alto da Serra; Santos; Sao Paulo; Serra do Cubotas; Serra do Mar. PERU. Huánuco: Tingo Maria; Puno: La Oroya, R. Inambari, 3100 ft.; La Union, R. Huacamayo, 2000 ft.; Oconeque, 7000 ft.; San Gabon, 2500 ft.; Santo Domingo, 6000 ft.; Tinguri, 3400 ft.; Tinguri; Yahuarmayo, 1200 ft.; not located: Pumayaca. COLOMBIA. Boyacá: Muzo, 400-800 m.; Cauca: Yuntas pres Cali; Valle del Cauca: Naranjito, Rio Dagua, 3900 ft. BOLIVIA. Cochabamba: R. Cristal Mayu, Chapare, 1-2000 m.

Pero longisecta Prout

Pero longisecta Prout, 1928:58.

Male (fig. 410).--Forewing yellow brown, but heavily overlain with green-brown scales; appearing olive brown; pale streak in cell limited to bottom half of cell and not as extensive as in other members of this group; discal dot black, conspicuous, of raised scales; patch following postmedial line absent; subterminal area yellow brown, overlain with dull brown, outer half darker than inner. Hindwing cream colored, heavily scaled with brown; basal area orange, particularly toward inner margin; no conspicuous patch in anal angle. Below tip of subterminal area of forewing and entire subterminal area of hindwing orange; middle of subterminal area of forewing with dark brown blotch; otherwise cream colored to dull white, scaled with dull brown.

Male genitalia (figs. 881, 881a).--Easily identified by subscaphium and bifid apex of aedeagus.

Female (fig. 411).--Larger and more orange than male.

Female genitalia (fig. 1106).

Type.--Described from "type male Ypiranga, Sao Paulo---," in British Museum of Natural History.

Discussion.--Pero longisecta is the most divergent member of this species group. However, it has many of the features of the other species, particularly an aedeagus similar to that of spongiata.

Specimens examined.--9 males and 4 females, June and September.

BRAZIL. Paraná: Castro; Santa Catarina: Blumenau; Jaragua do sul; Rio Vermelho, 830 m.; "St. Catherines"; São Paulo: Ypiranga.

GROUP 17

Group 17 is similar to parts of group 15 and is possibly derived from it, but the shape of the aedeagus is characteristic. The species of the group are consistently larger than those of group 15. Group 17 is almost entirely Andean.

Pero fortunata (Dognin)

Azelina fortunata Dognin, 1892:186.
Azelina molionaria Oberthür, 1912:297.

Male (fig. 412).--Legs brown; tarsi cream colored. Forewing basal area olive brown, yellowish indentation of antemedial line into discal cell; inner margin slightly brownish; median area olive brown, darkest along lower half of antemedial and postmedial lines; discal dot small or absent; postmedial line indented on veins; subterminal area concolorous with basal area, inner half lighter than outer half; series of black and white dots along outer margin. Hindwing cream colored, but heavily scaled with brown; postmedial line light, but not well marked. Below lower half of both forewing and hindwing cream colored, scaled with brown; costal half of forewing brown; patch of orange brown near postmedial line; discal dot present as small black line in ill-defined white area; upper half of hindwing orange brown; postmedial line marked with brown in anal angle; discal dot black.

Male genitalia (figs. 882, 882a, 883, 884).--Shapes of costal fold and tip of aedeagus are characteristic.

Male eighth sternite (fig. 903).

Female (fig. 413).

Female genitalia (fig. 1107).

Variation.--In Peru and Ecuador this species is uniform appearing with almost no apparent variation. However, specimens from Colombia are darker and the markings are more distinct. The costal fold of the male genitalia of one specimen from "Colombia" is larger and more irregular than in other specimens.

Types.--Dognin described fortunata from three males from "Environs de Loja." The male type with the male genitalia on slide R.W.P. 10524 is designated as the lectotype and is in the U.S. National Museum. Oberthür described molionaria from a single

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male from Balzapamba, Bolívar, Ecuador. This specimen is in the British Museum of Natural History.

Discussion.--Pero fortunata can usually be distinguished from the next by its diffuse olive-brown coloration.

Specimens examined.--57 males and 4 females, all year.

COLOMBIA. Cauca: Coreato, Cauca; Cundinamarca: Pacho, 2200 m.; Tolima: Canon del Tolima, 2500 m.; not located: San Antonio, 5800 ft.; no specific locality: Colombie. ECUADOR. Bolívar: Balzapamba; Chimborazo: Pallantanga; Loja: Environs de Loja; Napo-Pastaza: Baeza; not located: Hacienda Cayandeled, Rio Bamba, 4200 ft. PERU. Amazonas: Chachapoyas; Huambo; River Tabaconas, 6000 ft.; Cusco: Pampaconas River; Huánuco: Cushi, 1900 m.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Huancabamba, 5-6400 ft.; Puno: Oconeque, 7000 ft.; Oconeque; Santo Domingo, 6000 ft.; Tinguri; Uruhuasi, 7000 ft.; not located: Chaupe, 6100 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Charaplaya [Charapaya?], 1300 m., 65° W, 16° S; not located: R. Tanampaya.

Pero unfortunata Poole, NEW SPECIES

Male (fig. 414).--Forewing browner than that of fortunata and lacking yellow in upper half of basal area; antemedial line vague toward inner margin; discal dot usually present as two black dots; vague orange spot between discal dots and postmedial line.

Male genitalia (figs. 885, 885a).--Shape of tip of aedeagus will separate this species from others in group.

Male eighth sternite (fig. 904).

Female (fig. 415).--Darker than male, but otherwise similar.

Female genitalia (fig. 1108).

Variation.--Some specimens are slightly darker than others.

Types.--Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 12 males from type locality in U.S. National Museum; 1 male from Pozuzo, [Huánuco], Peru, in British Museum of Natural History; 1 male from Huancabamba, [Pasco], Peru, in British Museum of Natural History; 1 male from Agualani, [Puno], Peru, in British Museum of Natural History; 2 males from Oconeque, [Puno], Peru, in British Museum of Natural History.

Discussion.--Pero unfortunata is similar in appearance to fortunata, but is brown, not olive brown, and the maculation is more distinct.

Specimens examined.--18 males and 1 female, February and September.

BOLIVIA. Cochabamba: Incachaca. PERU. Huánuco: Pozuzo, 5-6000 ft.; Pasco: Huancabamba, 6-10,000 ft.; Puno: Agualani, 9000 ft.; Oconeque, 7000 ft.

Pero angulosa (Dognin), NEW COMBINATION

Meticulodes angulosa Dognin, 1907:20.

Male (fig. 416).--Legs with tarsi banded with dark brown on outer side, cream colored on inner side. Forewing brown, without yellow or olive tint; basal area brown, scaled with dark brown, particularly toward base; antemedial line shaded with dark scales, indistinct toward inner margin; median area dark along middle indentation of antemedial line, and with line paralleling postmedial line; discal dot well developed and double, with light line connecting two dots; vague orange patch between postmedial line and discal dots; subterminal area with dark gray band following postmedial line; outer half of subterminal area darker than inner half. Hindwing brown; postmedial line dark brown line followed by thin light band; subterminal area lighter in anal angle. Below similar to other species of group but darker.

Male genitalia (figs. 886, 886a).--Shape of aedeagus will distinguish this species from subangulosa.

Male eighth sternite (fig. 905).

Female.--Similar to male, but more strongly marked.

Female genitalia (fig. 1109).

Type.--Described from a single male from Agualani, [Puno], Peru, in U.S. National Museum.

Discussion.--The one specimen from Bolivia is slightly smaller and more uniform appearing than the Peruvian specimens.

Specimens examined.--10 males and 3 females, February and March.

BOLIVIA. La Paz: La Paz. PERU. Puno: Agualani, 9000 ft.; La Oroya, 3000 ft.; Limbani, 9000 ft.

Pero subangulosa Poole, NEW SPECIES

Male (fig. 417).--Forewing subterminal area with slightly olive tint, at least more so than in angulosa. Hindwing lighter than in angulosa, not suffused with dark gray brown. Below orange brown, lighter than in angulosa; inner margins of both wings cream colored, speckled with brown scales as in unfortunata.

Male genitalia (figs. 887, 887a).--Subscaphium and aedeagus will distinguish this species from angulosa.

Male eighth sternite (fig. 906).

Female.--Unknown.

Variation.--Almost none, but the discal dot is slightly variable in size and shape.

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Types.--Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Paratypes: 5 males from type locality in U.S. National Museum.

Discussion.--This species and angulosa are probably closely related.

Specimens examined.--9 males.

BOLIVIA. Cochabamba: Incachaca.

Pero converga Poole, NEW SPECIES

Male (fig. 418).--Palpi brown. Legs brown except cream-colored tarsi. Forewing velvety brown; basal area brown; antemedial line shaded with dark scales toward costa and in its central indentation; median area darkest toward inner margin and along postmedial line; discal dot double, upper dot usually larger than lower; subterminal area concolorous with basal area; usually dark patch in middle indentation of postmedial line; subterminal area darkest along outer margin, black dot at apex, followed by row of white ones along outer margin. Hindwing dull brown; postmedial line obscure and poorly marked. Below forewing brown except orange-brown upper half of subterminal area and dull white lower half; small black discal dot in ill-defined white area in forewing; upper half of hindwing orange brown, lower half cream scaled with brown; discal dot of hindwing black and well developed; postmedial line marked by black patch in anal angle.

Male genitalia (figs. 888, 888a).--Shape of aedeagus will identify this species.

Male eighth sternite (fig. 907).

Female (fig. 419).--Similar to male, but dark brown, not velvety brown; darker below.

Female genitalia (fig. 1110).

Variation.--There is a slight amount of variation in the size of the discal dot of the forewing above.

Types.--Holotype: Male, Incachaca, Cochabamba, Bolivia, J. Steinbach, in U.S. National Museum. Allotype: Female from type locality in U.S. National Museum. Paratypes: 4 males and 1 female from type locality in U.S. National Museum.

Discussion.--This species is superficially similar to the next, but is lighter and more smoothly marked. Their ranges are not known to overlap.

Specimens examined.--14 males and 3 females, all year.

BOLIVIA. Cochabamba: Incachaca; Yungas del Palmar; La Paz: R. Solocame, 1200 m., 67° W, 16° S. PERU. Huánuco: Cushi, 1900 m.; Pasco: Huancabamba, 5-6000 ft.; Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Oconeque, 7000 ft.

Pero tolima Poole, NEW SPECIES

Male (fig. 420).--Forewing similar to that of converga, but darker brown; lower half of antemedial line more distinct than in converga; discal dot black, double, strong; subterminal area more strongly mottled than in converga. Hindwing slightly darker than in converga, but otherwise similar. Below darker than in converga; inner margin of hindwing not as distinctly white; postmedial line of hindwing stronger than in converga.

Male genitalia (figs. 889, 889a).--Separable from converga by aedeagus and subscaphium.

Male eighth sternite (fig. 908).

Female.--Unknown.

Variation.--Little if any.

Types.--Holotype: Male, Monte Tolima, [Tolima], Colombia, 3500 meters, Fassl, in British Museum of Natural History. Paratypes: 3 males from type locality in British Museum of Natural History; 2 males from Paso del Quindin [Quindiu], [Tolima], Colombia, in British Museum of Natural History.

Discussion.--Pero tolima is superficially closest to converga, but it is darker and does not have the velvety appearance of that species.

Specimens examined.--6 males, February.

COLOMBIA. Tolima: Monte Tolima, 3200 m., 3500 m.; Paso del Quindin [Quindiu], 3500 m.

Pero alticola Prout

Pero alticola Prout, 1928:59.

Male (fig. 421).--Forewing gray brown to brown, heavily scaled with dark brown; basal area gray brown, heavily speckled with brown; median area lightest along costa, dark brown line paralleling postmedial line; discal dot a double black dot; orange patch between discal dot and postmedial line, sometimes poorly developed; subterminal area usually with grayish band paralleling middle of postmedial line; outer half of subterminal area darker, often edged inwardly by lunate line. Hindwing dark gray brown; postmedial line brown, not well defined; subterminal area usually slightly lighter toward anal angle. Below orange brown along costal half of both wings, cream colored on inner half of both wings.

Male genitalia (figs. 890, 890a).--Shapes of aedeagus and subscaphium will identify this species.

Male eighth sternite (fig. 909).

Female.--Unknown.

Variation.--This species varies in color and some specimens are redder than others. The orange patch between the discal dot and the postmedial line of

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the forewing above is also variable in its development and is almost absent in some specimens.

Type.--Described from several specimens from southern Peru, but Prout stated that the type is from Agualani, Peru. The specimen from this locality bearing Prout's type label is designated as the lectotype.

Discussion.--Most specimens of alticola are from southern Peru, although there is one specimen from Bolivia. Most specimens have been collected at about 7,000 feet elevation.

PERU. Puno: Agualani, 9000 ft.; La Oroya, 3000 ft.; La Union, R. Huacambayo, 2000 ft.; Limbani, 9500 ft.; Oconeque, 7000 ft.; Quinton; Tinguri. BOLIVIA. Cochabamba: Yungas del Palmar.

Pero messidora (Thierry-Mieg), NEW COMBINATION

Azelina messidora Thierry Mieg, 1894b:cix.

Male (fig. 422).--Legs with tarsi cream colored, but not contrasting as in preceding species of this group. Forewing gray brown; basal area gray scaled with brown; median area gray along costa, gray brown to brown below discal dot; discal dot a single black dot; dark brown line paralleling postmedial line; orange-tinted blotch between discal dot and postmedial line, but not conspicuous; subterminal area gray with dark gray band following top half of postmedial line and another browner line composed of lunules in middle. Hindwing dull brown; postmedial line brown, not well developed. Below brown on gray, inner margin of both wings only slightly lighter than costal half; forewing orange tinted near top half of postmedial line; top one-third of subterminal area of hindwing slightly orange; postmedial line brown and waved.

Male genitalia (figs. 891, 891a).--Shape of aedeagus is characteristic.

Male eighth sternite (fig. 910).

Female (fig. 423).--Similar to male, but darker, more uniform appearing; maculation of underside obscure.

Female genitalia (fig. 1111).

Variation.--The maculation of the Peruvian specimens is more contrasting than in the series from Bolivia.

Type.--Described from two specimens from "Perou." The male with U.S.N.M. type number 32379 and male genitalia on slide R.W.P. 10555 is designated as the lectotype.

Specimens examined.--24 males and 3 females, all year.

PERU. Cusco: Macchu Pichu, 2885 m.; Huánuco: Cushi, 1900 m.; Junin: Chanchamayo, 1000 m.; Huacapistana, 1800 m.; Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.; Puno: Oconeque, 7000 ft.; Uruhuasi, 7000 ft.; no specific locality: Peru. BOLIVIA. Cochabamba: Incachaca; Yungas del Palmar, 2000 m.; La Paz: La Paz; R. Solocame, 1200 m., 67° W, 16° S; no specific locality: Bolivia.

Pero fraterna (Warren), NEW COMBINATION

Meticulodes fraterna Warren, 1907:311.

Male (fig. 424).--This species is similar to scitaria. Legs with tarsi cream colored, normally clearly set off from gray-brown tibiae. Forewing antemedial line slanting outward from costa to inner margin, not inward as in scitaria. Hindwing basal area darker than subterminal area, darker than in scitaria. Below hindwing darker than that of scitaria; orange near postmedial line of hindwing extending down subterminal area, not across costal margin.

Male genitalia (figs. 893, 893a).--Shapes of aedeagus and subscaphium will distinguish this species from crepera and scitaria.

Male eighth sternite (fig. 911).

Female (fig. 425).--Forewing darker than in male, with violet tint; maculation as in male, but yellow patch in angulation of postmedial line at discal cell absent. Below similar to male, but darker.

Female genitalia (fig. 1112).

Variation.--In a series of specimens from Cundinamarca, Colombia, the males have a dark as well as a light form. The light form fits the description, but the dark form is similar to the female.

Type.--Warren described this species from a male from Pozuzo, [Huánuco], Peru, in the British Museum of Natural History.

Discussion.--Pero fraterna is similar to scitaria, but the antemedial line of the forewing above slants outward from the costa to the inner margin, not inward as in scitaria. The wing is narrower and the maculation is stronger than in crepera.

Specimens examined.--50 males and 3 females, all year.

COLOMBIA. Cauca: Popayan; Choco: Siato, R. Siato, Slopes of Choco, 5200 ft.; Cundinamarca: Finca San Pablo, 3 km. N. Alban, 1800 m.; Tolima: Moral, Quindiu. ECUADOR. Loja: Loja; Tungurahua: Banos, Rio Pastaza, 5-7000 ft. PERU. Amazonas: Huambo; Cusco: Macchu Pichu, 2885 m.; Huánuco: Pozuzo, 800-1000 m.; Junin: Chanchamayo, La Merced; Chanchamayo; Pasco: Huancabamba, 5-6000 ft.; Puno: Chirimayo, 1000 ft.; La Oroya, R. Inambari, 3100 ft.; Oconeque, 7000 ft.; Santo Domingo, 6500 ft.; Tinguri, 3400 ft.; Uruhuasi, 7000 ft.; San Martin: Jelepacio [Jepelacio?]. BOLIVIA. La Paz: Yungas de la Paz, 1000 m.

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Pero crepera Prout, NEW STATUS

Pero scitaria crepera Prout, 1928:59.

Male (fig. 426).--Forewing broader than in either scitaria or fraterna; angulation of postmedial line between M_1 and M_2 not as well developed as in messidora; discal cell light gray, darker along costal edge; outer half of subterminal area darker than inner half, more so than in messidora. Below much orange scaling on costal half of both wings; discal dot of hindwing absent.

Male genitalia (figs. 892, 892a).--Shapes of aedeagus and subscaphium will distinguish this species from any other in this group.

Male eighth sternite (fig. 912).

Female (fig. 427).--Forewing grayer than in male; discal dot large and angulate; antemedial line set off from remainder of wing with black. Below subterminal area of hindwing with some orange; top fourth of subterminal area of forewing also with some orange, but not along costal margin as in males.

Female genitalia (fig. 1113).

Variation.--There are differences between the type from Monte Tolima and the specimens from Monte Socorro. The Monte Tolima population is smaller, the wings are broader, and the tip of the aedeagus is longer. However, all these are differences of proportion.

Type.--Prout described his subspecies from "a short series from Monte Tolima, Colombia." The male with Prout's type label is designated as the lectotype and is in the British Museum of Natural History.

Discussion.--This species is most similar to fraterna and scitaria, but the wings are broader and the forewing is darker and with the maculation less distinct than in either of the other two species. All specimens known except one from Ecuador are from the department of Tolima in Colombia.

Specimens examined.--14 males and 2 females, January-March.

COLOMBIA. Tolima: Canon del Tolima, 1700 m.; Monte Socorro, 3400-3800 m.; Monte Tolima, 2700 m., 3200 m.; Paso del Quindiu, 3500 m. ECUADOR. Napo-Pastaza: Baeza.

Pero scitaria (Oberthür)

Azelina scitaria Oberthür, 1883:27.

Male (fig. 428).--Legs almost uniform gray; tarsi not contrasting with tibiae. Forewing gray brown; basal area gray with dark dash along inner margin; antemedial line slanting inward from top to bottom (not outward as in fraterna); median area gray brown, but discal dot and often costa gray; discal dot a small black spot; dark line paralleling postmedial line; small yellow blotch between this line and postmedial line opposite discal dot; subterminal area light gray, with dark gray shade along upper half of postmedial line; outer half of subterminal area darker than inner half and marked off by brown lunate band. Hindwing light gray, scaled with dull brown; postmedial line brown. Below postmedial lines of forewing and hindwing surrounded in upper half by orange blotch, orange extending along costal margin in hindwing; discal dot of hindwing absent, but white area present; postmedial line of hindwing brown, waved, and well developed over entire length.

Male genitalia (figs. 894, 894a).--Shape of subscaphium will distinguish this species from either crepera or fraterna.

Male eighth sternite (fig. 913).

Female.--Unknown.

Variation.--The angle of slant of the antemedial line of the forewing above is variable, but it is never outward as in fraterna. Specimens from northern and central Peru are larger and more sharply marked than those from either southern Peru or the Andes of Ecuador or Colombia. The Ecuadorean and Colombian specimens are darker than those from southern Peru.

Type.--Oberthür based scitaria on a single male from "Tambillo, Perou," now in the British Museum of Natural History.

Discussion.--Pero scitaria is similar superficially to fraterna, but the antemedial line of the forewing above slants forward to the inner margin, not outward.

Specimens examined.--105 males, all year.

COLOMBIA. Cauca: Popayan; Cundinamarca: Pacho, 200 m.; Vaupés: Ob. Rio Negro, 800 m.; no specific locality: Colombia. ECUADOR. Imbabura: Lita, 3000 ft.; Paramba, 3500 ft.; Loja: Environs de Loja; Napo-Pastaza: Baeza; Tungurahua: El Topo, Rio Pastaza, 4200 ft.; Zamora: Palanda; Zamora. PERU. Amazonas: Huambo; R. Tabaconas; Cusco: Coosnipata, Paucartambo; Huánuco: Cushi, 1900 m.; Pozuzo; Junin: Chanchamayo, 1000 m.; Pasco: Huancabamba, Cerro de Pasco, 8-10,000 ft.; Huancabamba; Oxapampa, 6400 ft.; Puno: La Oroya, R. Inambari, 3100 ft.; Santo Domingo, 6000 ft.; not located: Chaupe, 6100 ft.; Tambillo; no specific locality: Peru.

Pero elmonjensis (Dognin)

Azelina elmonjensis Dognin, 1900:232.

Male (fig. 429).--Palpi light gray brown. Legs light gray brown, but tarsi cream colored. Forewing light gray brown; top half of basal area light gray brown; bottom half brown; antemedial line fine and distinct; median area brown with slight violet tint, lightest along costa; median area dark brown along postmedial line; discal dot with two black dots; subterminal area light gray brown with dark band in middle indentation of postmedial line and series of lunules running through middle of subterminal area. Hindwing light gray brown; inner margin dark brown; postmedial line fine. Below light brown with violet

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tint; inner margins of both wings cream colored, speckled with dark scales.

Male genitalia (figs. 895, 895a).—Shape of subscaphium is characteristic.

Male eighth sternite (fig. 914).

Female.—Unknown.

Type.—Described from single male from "El Monje, pres Loja, Equateur," now in U.S. National Museum.

Discussion.—The soft light gray-brown wings are distinctive and characteristic.

Specimen examined.—1 male.

ECUADOR. Loja: El Monje, pres Loja.

Pero lepa Poole, NEW SPECIES

Male (fig. 430).—Forewing dark brown; basal area brown, strongly flecked with dark brown; antemedial line vague toward inner margin; black blotch following median indentation of antemedial line; discal dot double, black; postmedial line interrupted on veins, not strong, vague gray-brown band following middle of postmedial line; subterminal area vaguely, but not strongly, mottled with dark and light areas, outer one-third slightly darker than inner two-thirds. Hindwing dark brown; postmedial line brown followed by light band. Below discal dot of forewing a strong white line; postmedial line strong and black in upper half of forewing, absent or vague in lower half; orange-brown patch along postmedial line in upper half of subterminal area; inner margin of hindwing cream colored; postmedial line black, waved, strongly accented with black in anal angle.

Male genitalia (figs. 896, 896a).—Shapes of valve, aedeagus, and subscaphium are all characteristic.

Male eighth sternite (fig. 915).

Female.—Unknown.

Variation.—The clarity of the maculation varies slightly.

Types.—Holotype: Male, Monte Tolima, [Tolima], Colombia, 3200 m., Fasal, in U.S. National Museum. Paratypes: 1 male from type locality in U.S. National Museum, 4 males in British Museum of Natural History; 2 males from Monte Tolima, 2700 meters, in British Museum of Natural History; 8 males from Pacho, [Cundinamarca], Colombia, 2200 meters, in British Museum of Natural History.

Discussion.—Pero lepa has the appearance of this species group, but the male genitalia are slightly anomalous and are perhaps intermediate between this group and the barbarata species complex of group 15.

Specimens examined.—16 males, January and February.

COLOMBIA. Cundinamarca: Pacho, 2200 m.; Tolima: Monte Tolima, 2700 m., 3200 m.

Pero bonata Poole, NEW SPECIES

Male (fig. 433).—Forewing dull dark brown; basal area light gray brown, but heavily flecked with dark brown scales; antemedial line black, followed by dark brown scaling; median area darkest along postmedial line, antemedial line, and inner margin; discal dot double, two black spots in white area; two vague orange spots between discal dot and postmedial line; subterminal area dull dark brown with two dark bands, one along postmedial line and another near outer margin; two white dots along outer margin. Hindwing dull dark brown; postmedial line very vague; all other maculation absent. Below dull dark brown; forewing scaled with orange along costa, particularly in subterminal area and between discal dot and postmedial line; discal dot of forewing a dull white line; costa of hindwing vaguely scaled with orange; postmedial line present only as dark brown line in anal angle.

Male genitalia (figs. 916, 916a).—Characterized by shapes of subscaphium and aedeagus.

Male eighth sternite (fig. 916b).

Female.—Unknown.

Type.—Holotype: Male, Huancabamba, [Pasco], Peru, Cerro de Pasco, 6-10,000 ft., in British Museum of Natural History.

Specimen examined.—1 male.

PERU. Pasco: Huancabamba, Cerro de Pasco, 6-10,000 ft.

Pero lusa Poole, NEW SPECIES

Male (fig. 431).—Palpi light brown, outer edge cream colored. Legs with femora light brown tipped with cream color; tibiae tipped with cream color and tarsi cream colored. Forewing basal area light brown, heavily flecked with dark gray brown, lightest toward costa; antemedial line dark brown with two outward projections, one toward costa and another near inner margin; median area darkest along lower half of postmedial line and between two projections of antemedial line; discal dot a double black dot; discal cell yellow between discal dot and postmedial line; upper half of postmedial line followed by gray band and dark brown wavy band in middle of subterminal area; series of black and white dots along outer margin. Hindwing dull white, brownish along inner margin; postmedial line a dark brown line followed by thin light band. Below upper half of subterminal area of forewing yellowish; discal dot of forewing a dull white band; hindwing dull white scaled with brown, strongest along outer margin and costa; discal dot a large black blotch, divided into four quarters; postmedial line a dentate brown line followed by thin dull white band.

Male genitalia (figs. 897, 897a).—Shape of subscaphium is characteristic.

Female (fig. 432).—Maculation as in male, but all dark gray brown; yellow patch in discal cell of

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forewing between discal dot and postmedial line absent.

Female genitalia (fig. 1114).

Variation.—The specimen described is from Tucumán, Argentina. The two males from Cochabamba, Bolivia, are superficially different from the Argentine specimens. In these two males the forewing is heavily scaled with dark brown and has a rough appearance. These specimens are not yellowish as are the Argentine ones, and only the yellow patch in the discal cell of the forewing is present. Individually there is some variation in the amount of yellow in the males from Argentina.

Types.—Holotype: Male, Tucumán, Argentina, in U.S. National Museum. Allotype: Female from type locality in British Museum of Natural History. Paratypes: 6 males from type locality in British Museum of Natural History, 3 males in U.S. National Museum; 17 males, El Siambon, 1700 m., Tucumán, Argentina, in British Museum of Natural History.

Discussion.—Although this species would superficially seem to belong to the barbarata complex, the shape of the aedeagus and the form of the ostium of the female gentialia indicate a distant relationship with this species group. The two specimens from Cochabamba, Bolivia, are superficially different from the Tucumán population, but the male genitalia are identical.

Specimens examined.—28 males and 6 females.

ARGENTINA. Tucumán: El Siambon, 1700 m.; Tucuman.
BOLIVIA. Cochabamba: Cochabamba.

GROUP 18

The next two species are unlike anything else in the genus Pero and are perhaps deserving of their own genus. However, the male genitalia, although distinctive, do show the basic characteristic of Pero, particularly the costal fold. Pero derga is known only from two males from "Rio" and the second species, siambona, from a series of females from the Province of Tucumán in Argentina. Pero siambona could be the female of derga, but this does not seem likely because of the differences in range. Besides the differences in the male and female genitalia, the palpi are longer than in any other group of Pero and are porrect, not upturned. The antennae of the males of derga are strongly pectinate.

Pero derga Poole, NEW SPECIES

Male (fig. 434).—Antennae pectinate. Palpi long, porrect. Legs dull white. Forewing basal area dark brown, darker than median area, but not well set off from it; median area darker along postmedial line; discal dot a black spot; postmedial line a straight dark brown line followed by thin white band, slanting strongly inward to inner margin; subterminal area with dark band paralleling postmedial line. Hindwing dull white, heavily scaled with dull brown; only discal dots of forewing and hindwing present, but these are vague.

Male genitalia (figs. 917, 917a).—Unlike anything else in Pero.

Female.—Unknown.

Types.—Holotype: Male, "Rio," Derg, [Rio de Janeiro], Brazil, in U.S. National Museum. Paratype: Male from type locality in British Museum of Natural History.

Discussion.—This species and the following are unlike anything else in the genus. The next species may be the female of this species, but the differences in locality and the lack of precedence for this type of disjunct distribution have kept me from considering them as the same.

Specimens examined.—2 males.

BRAZIL. Rio de Janeiro: Rio.

Pero siambona Poole, NEW SPECIES

Female (fig. 435).—Antennae simple. Legs with inner faces cream colored, outer faces dull, dark brown. Forewing dark brown; basal area dark brown, not at all set off from median area; antemedial line exceedingly vague; discal dot a small black spot, or absent; postmedial line a straight, white, thin band, curving inward to inner margin; subterminal area lighter than remainder of wing, darkest along outer margin. Hindwing dull dark brown; postmedial line a vague light band. Below dull white, heavily scaled with dark brown; postmedial lines of forewing and hindwing vague white bands, particularly in hindwing; discal dots of forewing and hindwing present, but vague.

Female genitalia (fig. 1115).

Male.—Unknown.

Types.—Holotype: Female, Siambon, Tucumán, Argentina, 1600 meters, February 1933, R. Schreiter, in British Museum of Natural History. Paratypes: 4 females from type locality in British Museum of Natural History; 3 females from Tucumán in British Museum of Natural History.

Discussion.—Pero siambona is possibly the female of the preceding species, but the difference in ranges has led me to consider them as separate species.

Specimens examined.—8 females, January and February.

ARGENTINA. Tucumán: Siambon, 1600 m.; Tucuman, 1100 m.; Tucuman.

GROUP 19

The last group of Pero is characterized by the structure of the valve (fig. 918) and subscaphium of the male genitalia, as well as by the long palpi of both sexes. The single species of group 19 is found in southern Brazil. It is perhaps worthy of a genus of its own, but the similarities of perioda with the rest of Pero indicate that it is best placed here.

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Pero perioda Poole, NEW SPECIES

Male (fig. 436).—Antennae simple or slightly serrate. Palpi large, third segment porrect. Forewing violet gray; basal area usually slightly lighter than median area; antemedial line dark brown; discal dot a white spot; costa in median area lighter than remainder of area; subterminal area conspicuously lighter than remainder of wing, and vaguely mottled with dark patches, particularly toward postmedial line and inner margin. Hindwing dull violet brown; postmedial line a dark brown line followed by thin cream-colored line; red-brown patch in anal angle; discal dot a small white spot or absent. Below postmedial line of forewing comprised of series of dull white spots; outer half of subterminal area of forewing grayish; discal dot of hindwing large, black; postmedial line of hindwing black, dentate, shaded outwardly with cream color; red patch in anal angle.

Male genitalia (figs. 918, 918a).—Characterized by shape of subscaphium, form of gnathos, and lack of costal fold.

Female (fig. 437).—Similar to male, but slightly larger and perhaps slightly browner.

Female genitalia (fig. 1116).

Types.—Holotype: Male, Alto da Serra, Santos, [São Paulo], Brazil, October 1922, R. Spitz, in British Museum of Natural History. Allotype: Female, Jaragua do Sul, Santa Catarina, Brazil, in British Museum of Natural History. Paratypes: 1 male from type locality in British Museum of Natural History; 1 male from São Paulo, Brazil, in U.S. National Museum; 1 female from allotype locality in British Museum of Natural History.

Discussion.—Pero perioda appears superficially closest to some members of group 2, particularly hoffmanni and ligera. The male genitalia of perioda are very distinctive, both the odd shape of the subscaphium and the shape of the gnathos. The most distinctive characters are the weak development of the costal fold of the male genitalia and the long palpi.

Specimens examined.—3 males and 2 females, September and October.

BRAZIL. Santa Catarina: Jaragua do Sul; Rio Vermelho; São Paulo: Alto da Serra, Santos; Sao Paulo.

SPECIES NOT RECOGNIZED OR DESCRIBED

Azelina amyclaria Walker, 1860a:195. TYPE LOST.
Azelina asilasaria Walker, 1860a:194. TYPE LOST.
Meticulodes obfuscata Warren, 1894:461. TYPE DESTROYED.
Meticulodes carrerasi Giacomelli, 1911:23. LOCATION OF TYPE UNKNOWN.
Azelina ceriata Walker. NEVER DESCRIBED.

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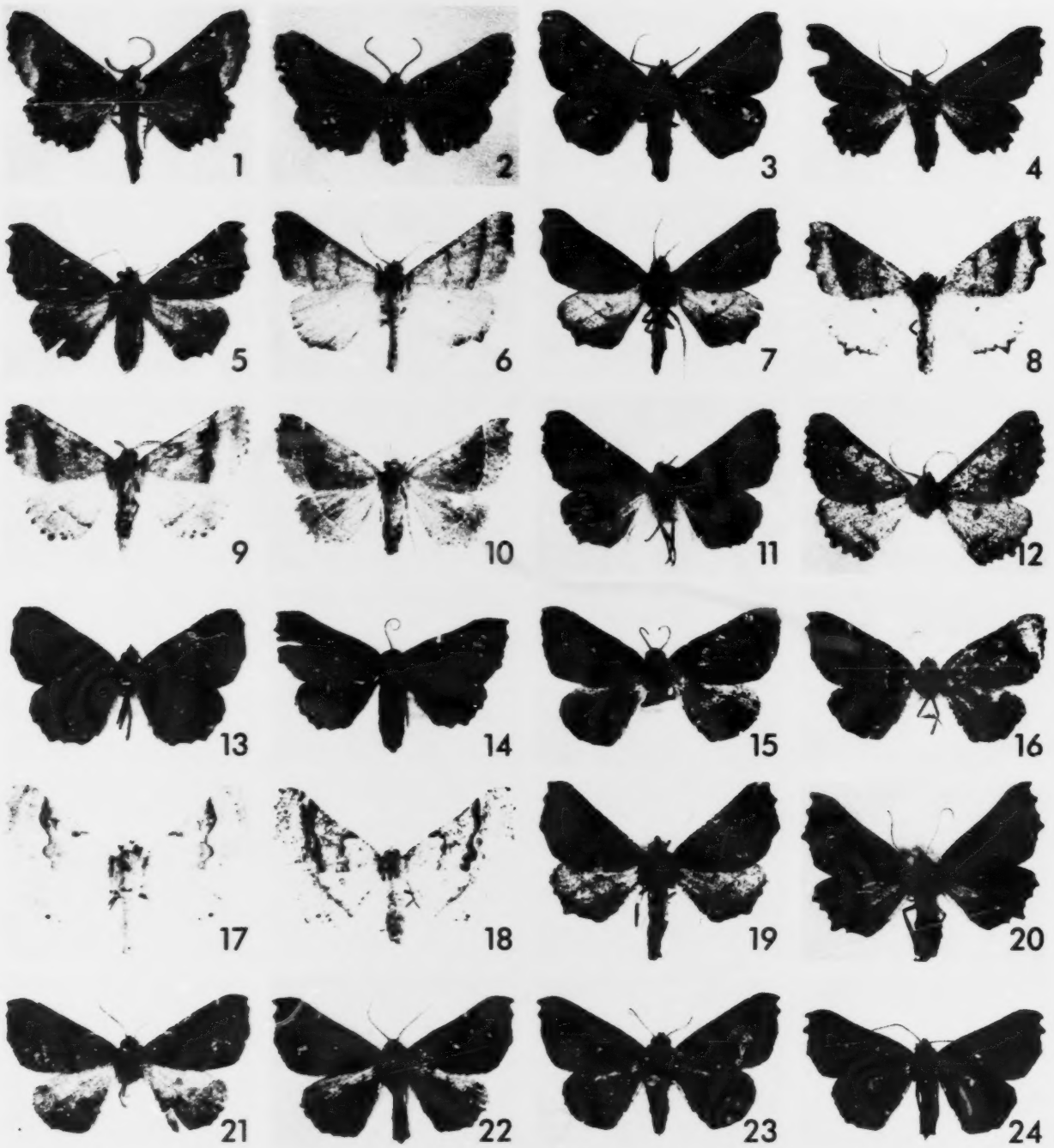

Figures 1-24.--Pero adults: 1, meskaria, male, Baboquivari Mts., Arizona, and 2, female, Brownsville, Texas; 3, astapa, male, and 4, female, El Cuji, Lara, Venezuela, and 5, female, El Salto, Mexico; 6, radiosaria, male, San Diego, California, and 7, male, Brownsville, Texas, and 8, female, Loma Linda, California; 9, inviolata, male, Palm Springs, California, and 10, female, Borrego, California; 11, rava, male, Bogotá, Cundinamarca, Colombia; 12, pima, male, Baboquivari Mts., Arizona; 13, aurunca, male, Juan Vinas, Cartago, Costa Rica, and 14, female, Quirigua, Izabal, Guatemala; 15, punta, male, British Honduras, and 16, female, Jalapa, Veracruz, Mexico; 17, flavisaria, male, and 18, female, Baboquivari Mts., Arizona; 19, zalissaria, male, and 20, female, Oneco, Florida; 21, uniformis, male, and 22, female, Castro, Paraná, Brazil; 23, lignata, male, Cayuga, Izabal, Guatemala, and 24, female, St. Laurent, Maroni, French Guiana.

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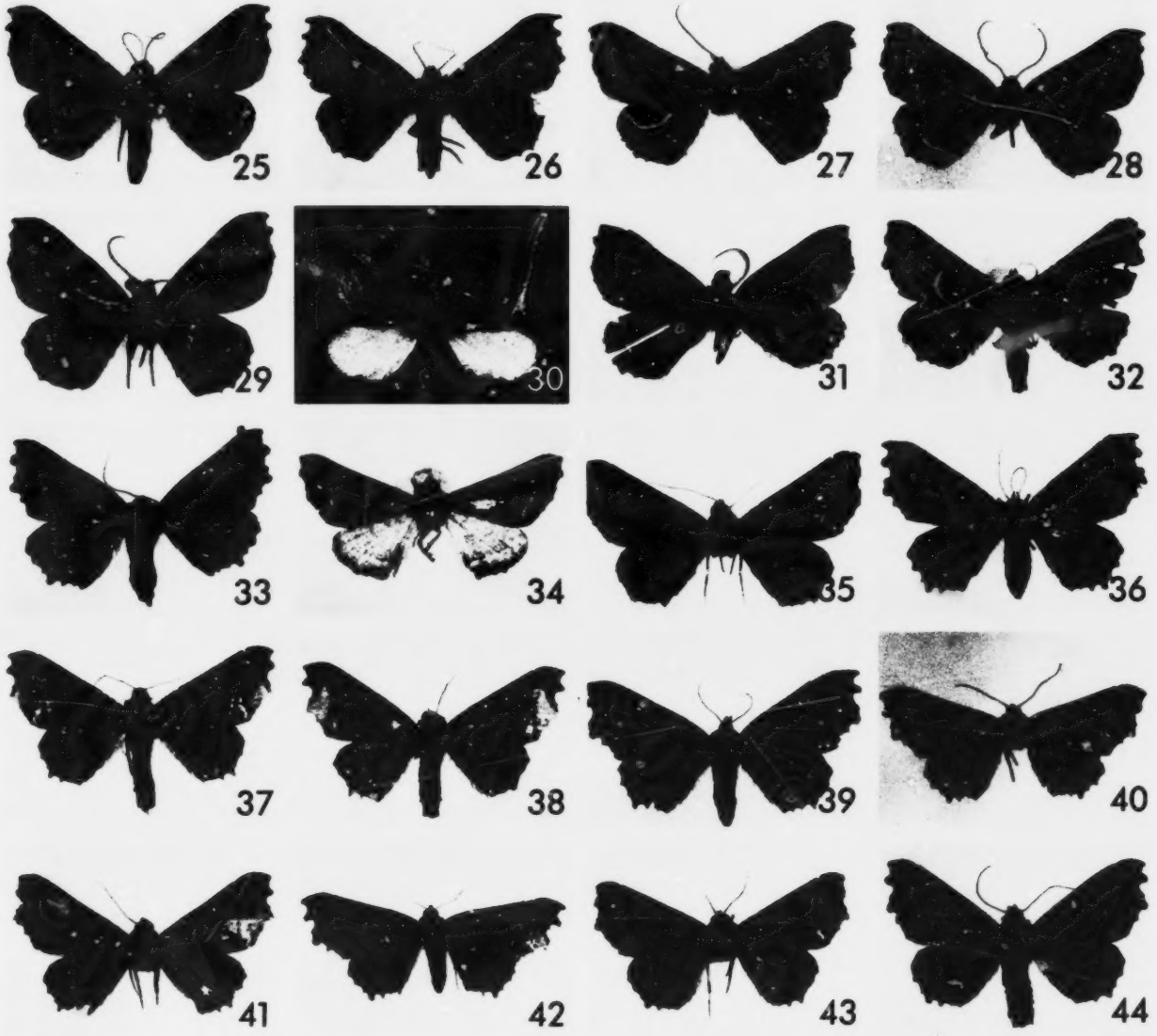

Figures 25-44.--Pero adults: 25, afuera, male, and 26, female, Rancho Grande, Aragua, Venezuela; 27, obscurior, male, "Colombia," and 28, female, Balzapamba, Bolívar, Ecuador; 29, nata, male, São Paulo de Olivença, Amazonas, Brazil; 30, minetraria, male, Matto Grosso, Brazil; 31, nyctopa, male, Rio Grande, British Honduras; 32, pelota, male, and 33, female, Pelotas, Rio Grande do Sul, Brazil; 34, sprata, male, Tucumán, Argentina; 35, chapela, male, Middlesex, British Honduras, and 36, female, Barro Colorado Island, Panama; 37, anceta, male, St. Laurent, Maroni, French Guiana; 38, teleclyta, male, Joinville, Santa Catarina, Brazil, and 39, female, Rancho Grande, Aragua, Venezuela; 40, yahua, male, Yahuarmayo, Puno, Peru, and 41, male, Pará, Brazil, and 42, female, "British Guiana"; 43, pequena, male, Misantla, Veracruz, Mexico; 44, jimenezaria, male, Rancho Grande, Aragua, Venezuela.

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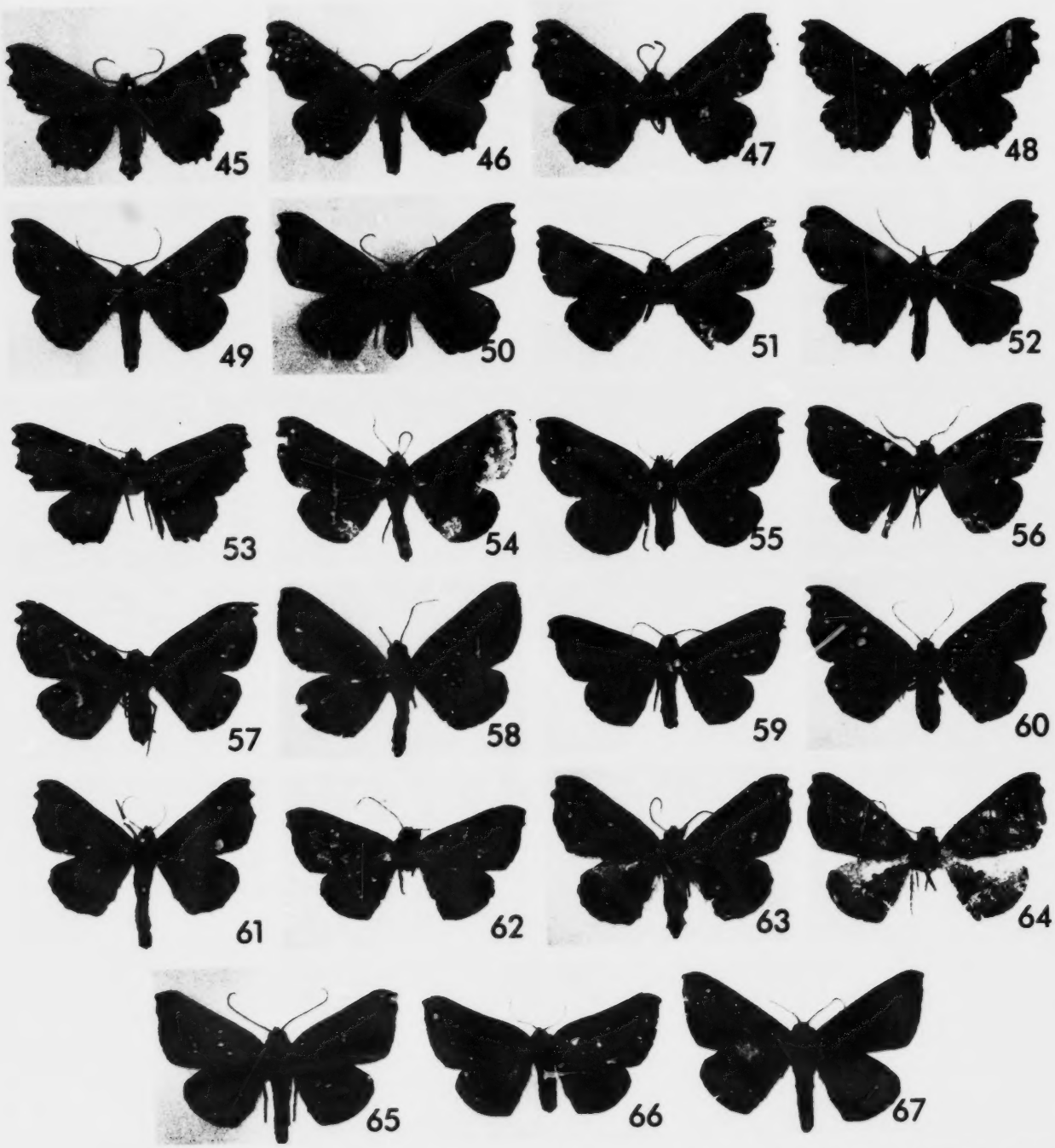

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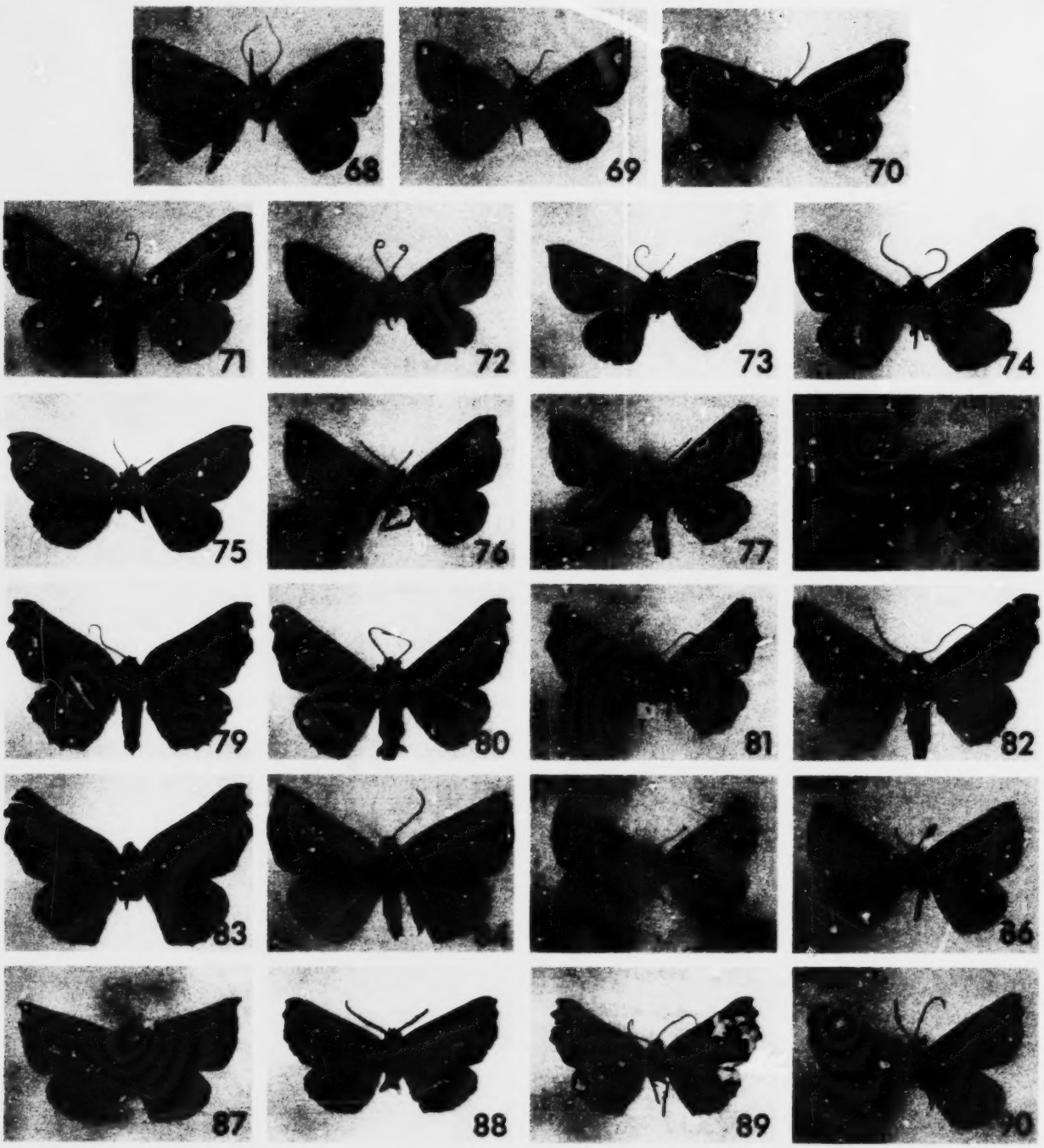

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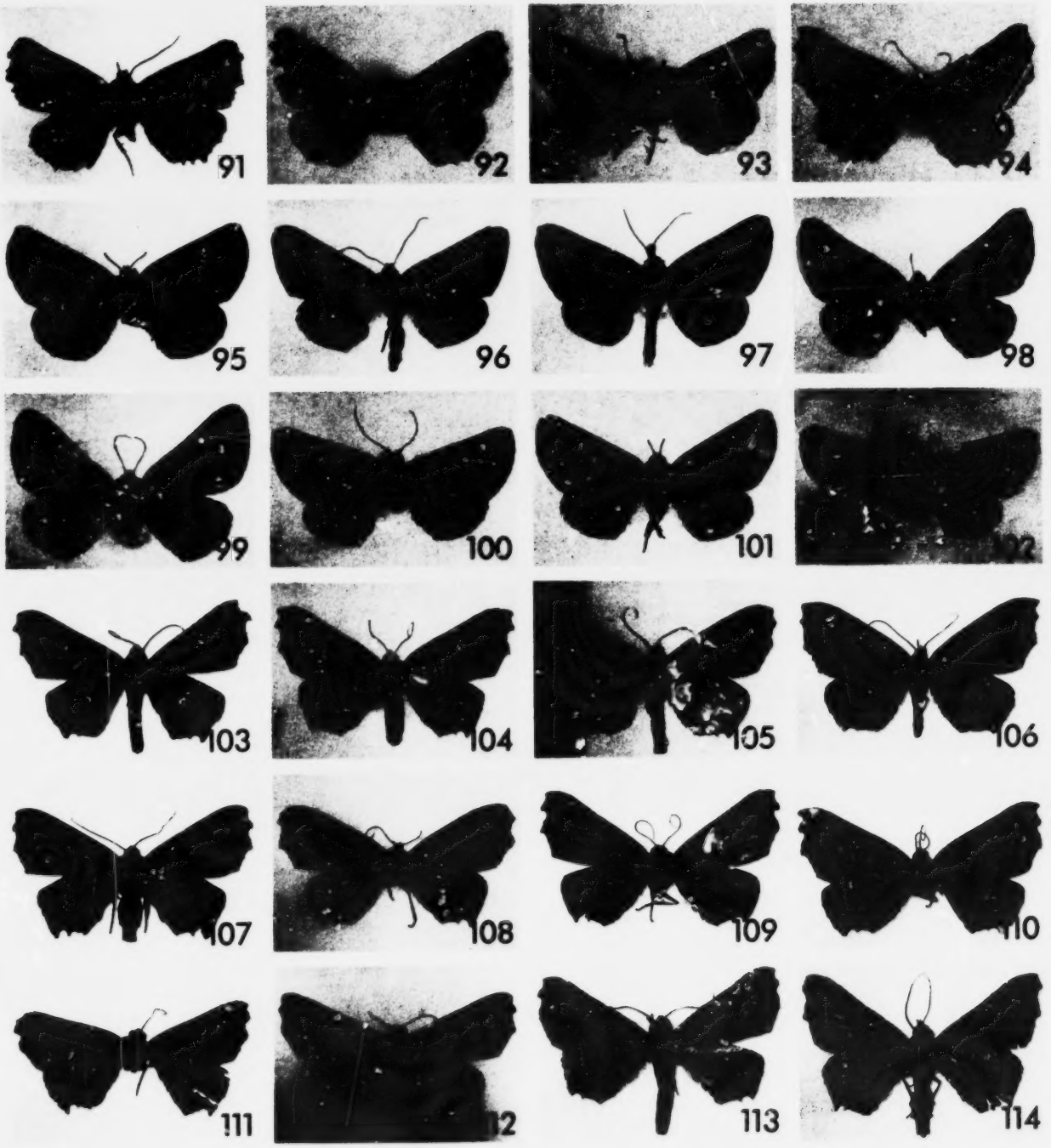

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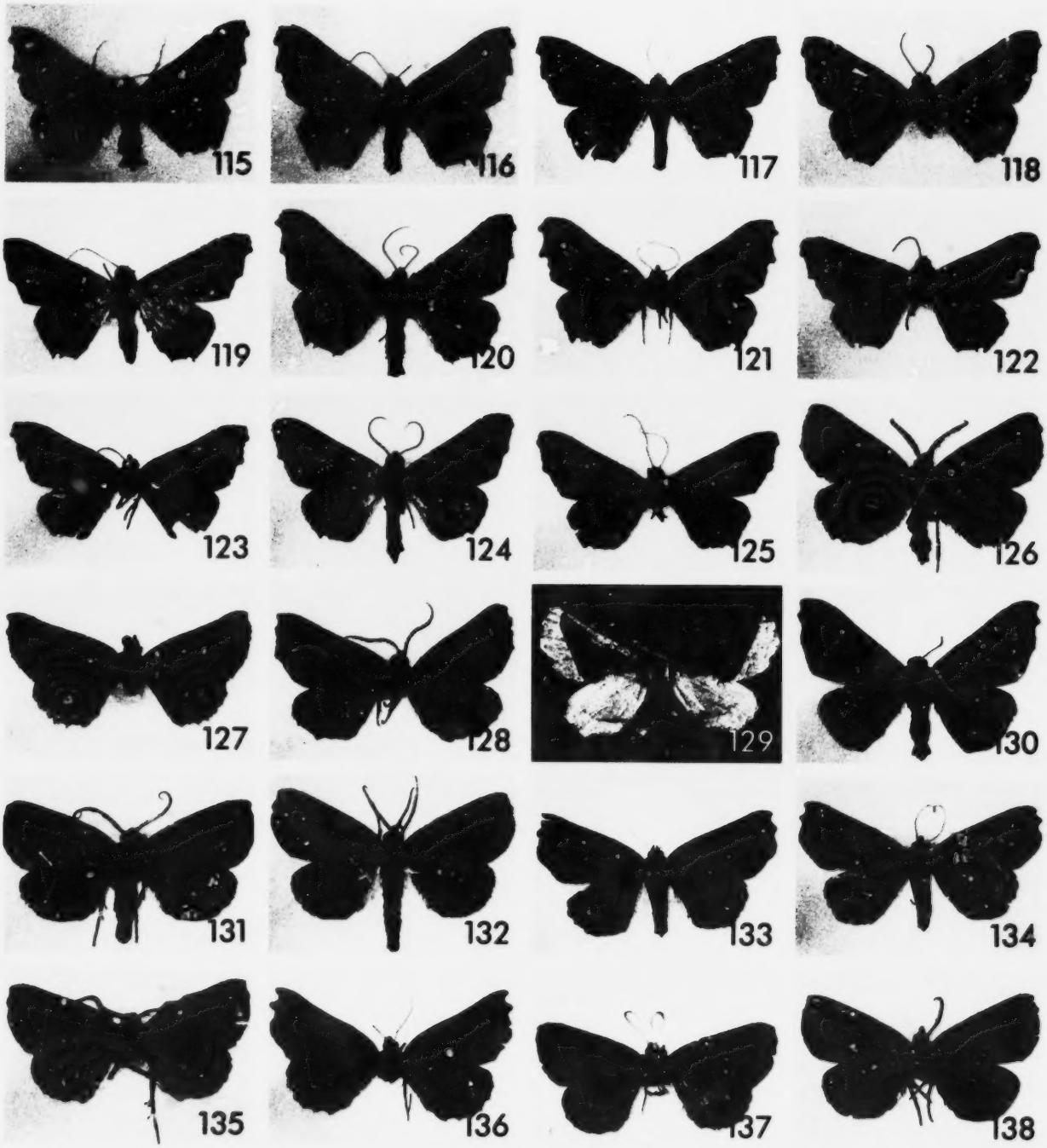

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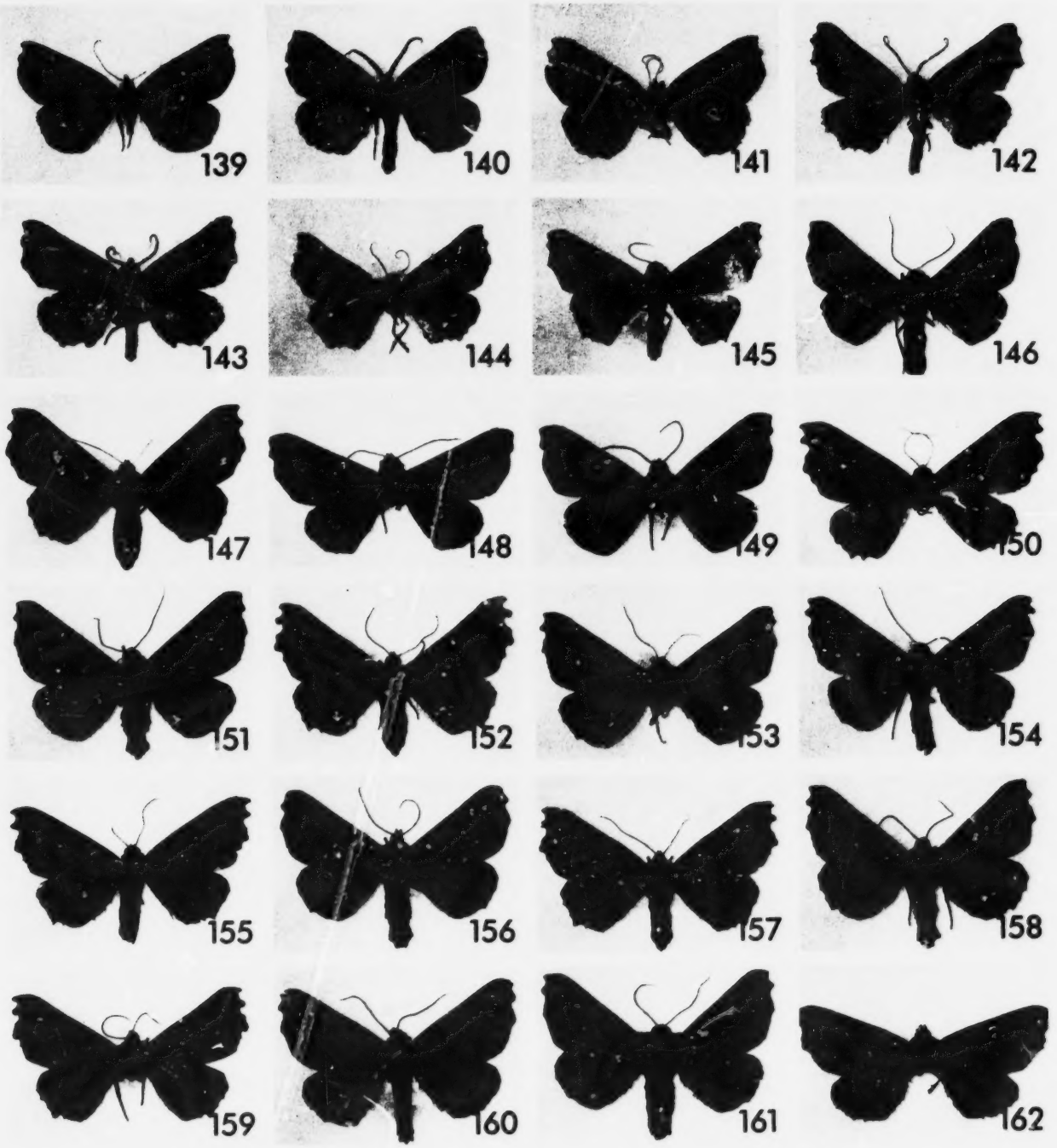

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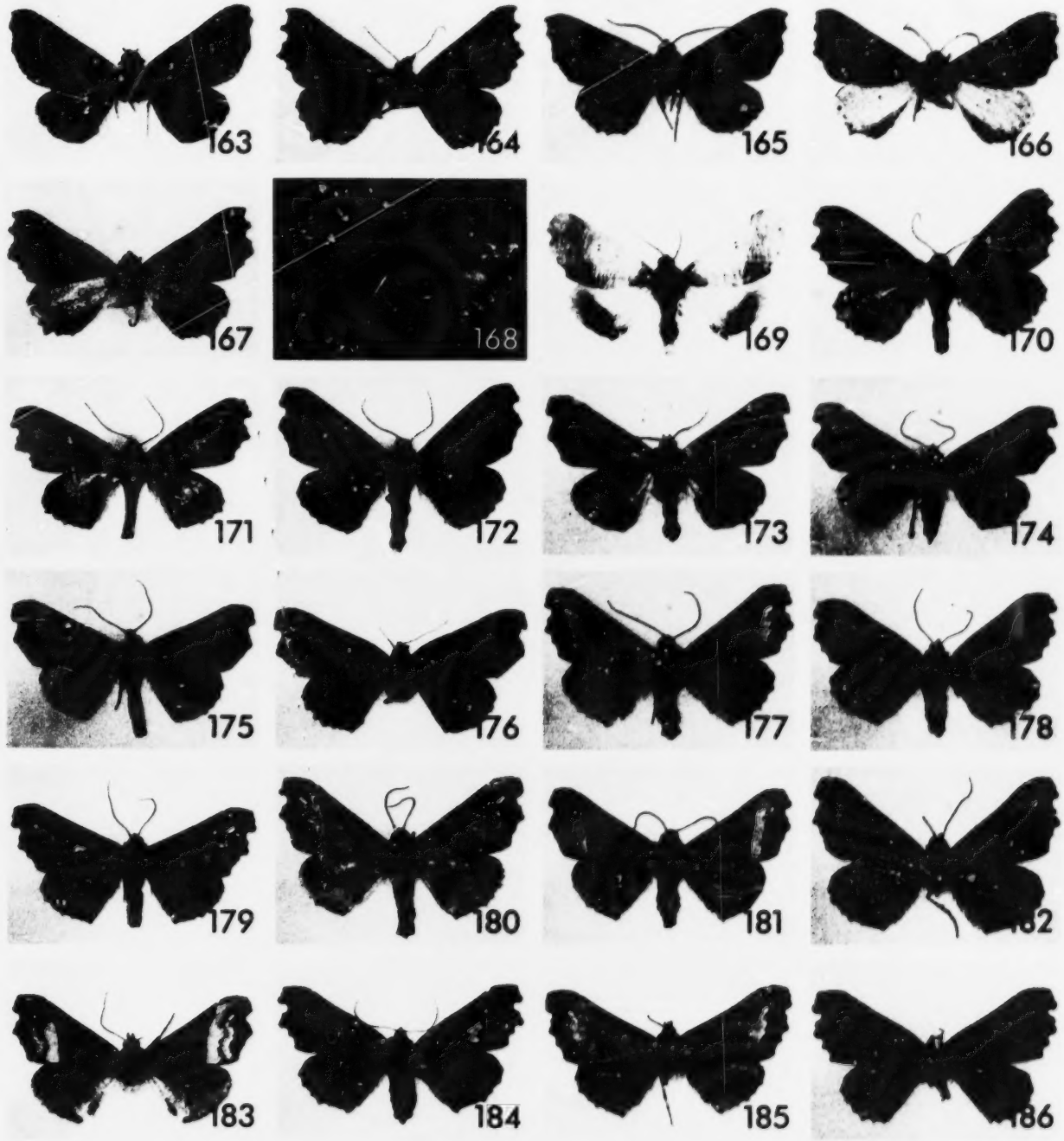

Figures 163-186.--Pero adults: 163, spitzi, male, "St. Catherines," Brazil; 164, contrasta, female, Rancho Grande, Araguá, Venezuela; 165, collenettei, male, Corcovado Forest, Rio de Janeiro, Brazil; 166, pernamba, male, and 167, female, Sierra de Bernada, Pernambuco, Brazil; 168, fusca, female, Paraná, Entre Ríos, Argentina; 169, plagodiata, male, Rancho Grande, Aragua, Venezuela; 170, polygonaria, male, Rancho Grande, Aragua, Venezuela; 171, otra, male, Tingo María, Huánuco, Peru; 172, árciogona, male, Nova Teutonia, Santa Catarina, Brazil; 173, amanda, male, Peto, Yucatán, Mexico, and 174, female, Rancho Grande, Aragua, Venezuela; 175, pumaria, male, La Union, Puno, Peru, and 176, female, Medina, Boyacá, Colombia; 177, pallidior, male, and 178, female, Rancho Grande, Aragua, Venezuela; 179, naranja, male, Pozuzo, Huánuco, Peru; 180, suffusa, male, Loja, Loja, Ecuador; 181, clana, male, Rancho Grande, Aragua, Venezuela, and 182, male, Rio Dagua, Colombia, and 183, male, "Ecuador," and 184, female, Rancho Grande, Aragua, Venezuela; 185, speciosata, male, Huancabamba, Pasco, Peru, and 186, female, Loja, Loja, Ecuador.

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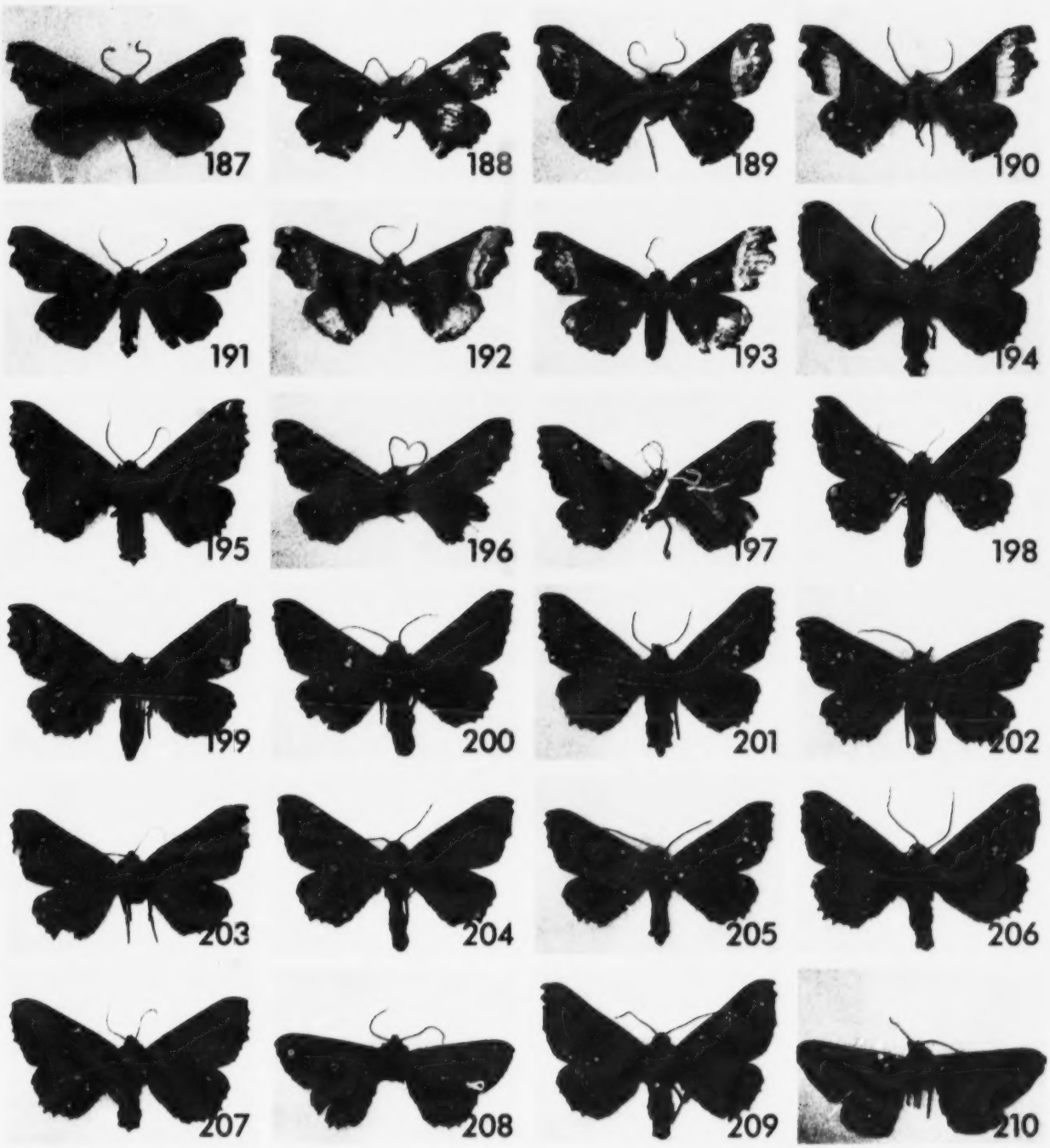

Figures 187-210.--Peru adults: 187, costa, male, Mount Poas, Heredia, Costa Rica, and 188, female, Monteverde, Puntarenas, Costa Rica; 189, cruza, male, Orizaba, Veracruz, Mexico; 190, decora, male, and 191, female, Nuevo Teutonia, Santa Catarina, Brazil; 192, delauta, male, Tuis, Cartago, Costa Rica, and 193, female, Las Jinotepes, Nicaragua; 194, melissa, male, and 195, female, Lagos del Montebello, Chiapas, Mexico; 196, rica, male, and 197, female, Pinar Bonito, Constanza, Dominican Republic; 198, bicolor, male, and 199, female, Hardware Gap, Jamaica; 200, vecina, male, Terepaima, Lara, Venezuela, and 201, female, Rancho Grande, Aragua, Venezuela; 202, curuma, male, and 203, female, Vista Hermosa, Oaxaca, Mexico; 204, idola, male, and 205, female, Orosi, Cartago, Costa Rica; 206, lessema, male, Zacualpan, Veracruz, Mexico, and 207, female, Jalapa, Veracruz, Mexico; 208, iraza, male, Irazu, Costa Rica; 209, saturata, male, Rancho Grande, Aragua, Venezuela; 210, electra, male, Huancabamba, Pasco, Peru.

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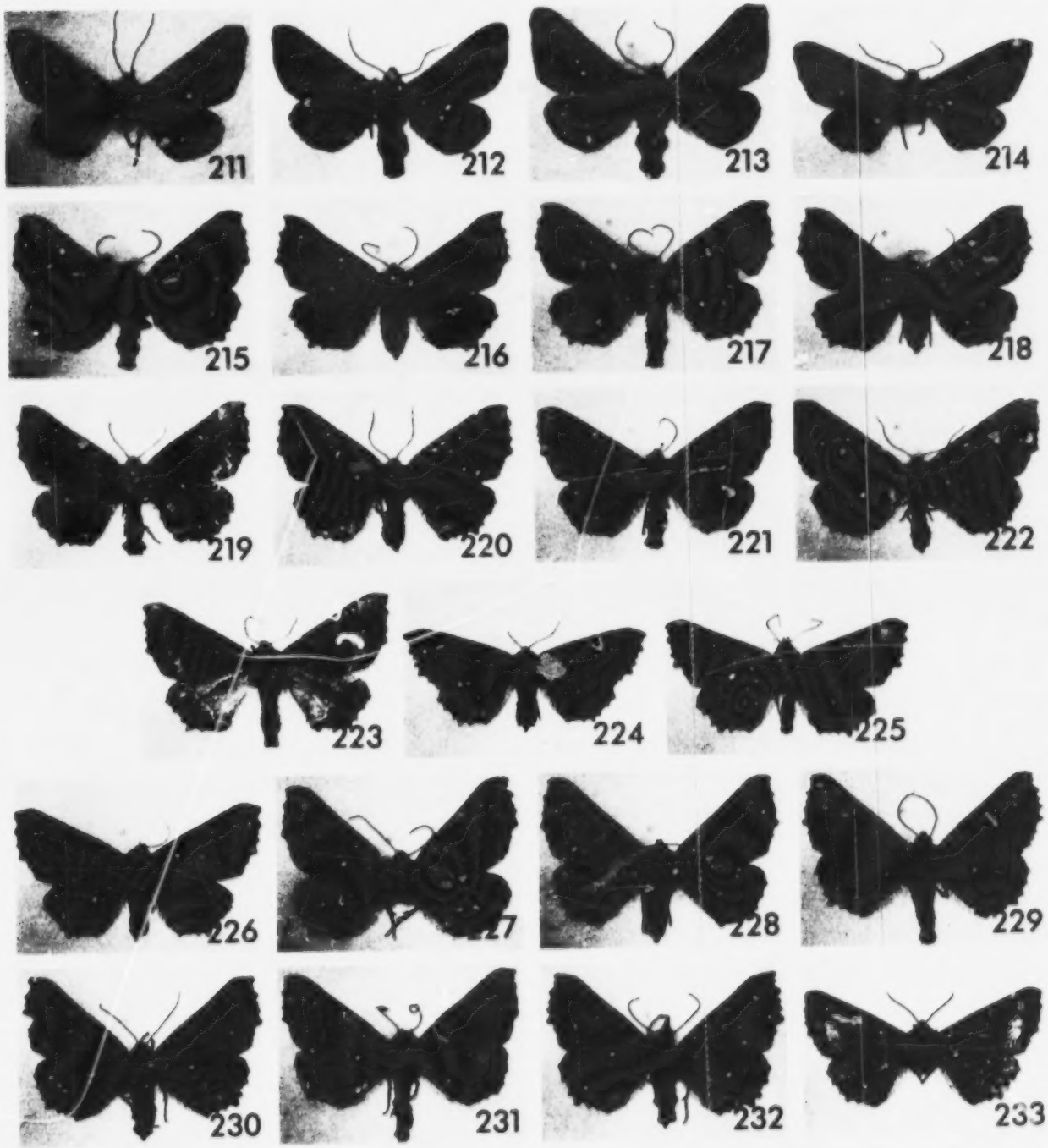

Figures 211-233.--Pero adults: 211, nucleata, male, Incachaca, Cochabamba, Bolivia; 212, rotundata, male, Rancho Grande, Aragua, Venezuela; 213, aragua, male, Rancho Grande, Aragua, Venezuela; 214, contenela, male, "Guatemala"; 215, honestaria, male, New Brighton, Pennsylvania, and 216, female, Decatur, Illinois; 217, hubneraria, male, Dutchess Co., New York, and 218, female, Ilion, New York; 219, morrisonaria, male, Duncan Island, Vancouver, British Columbia, and 220, female, Hymer's, Ontario; 221, gigantea, male, White Mts., Arizona, and 222, female, Taos Mts., New Mexico; 223, mizon, male, and 224, female, Duncan's Island, Vancouver, British Columbia; 225, macdunnoughi, male, and 226, female, San Diego, California; 227, catalina, male, and 228, female, Santa Catalina Island, California; 229, modesta, male, and 230, female, Walnut Canyon, Arizona; 231, occidentalis, male, Hart Prarie, Coconino Co., Arizona, and 232, female, West Fork of Oak Creek Canyon, Arizona; 233, behrensaria, male, Monachee Meadows, Tulare Co., California.

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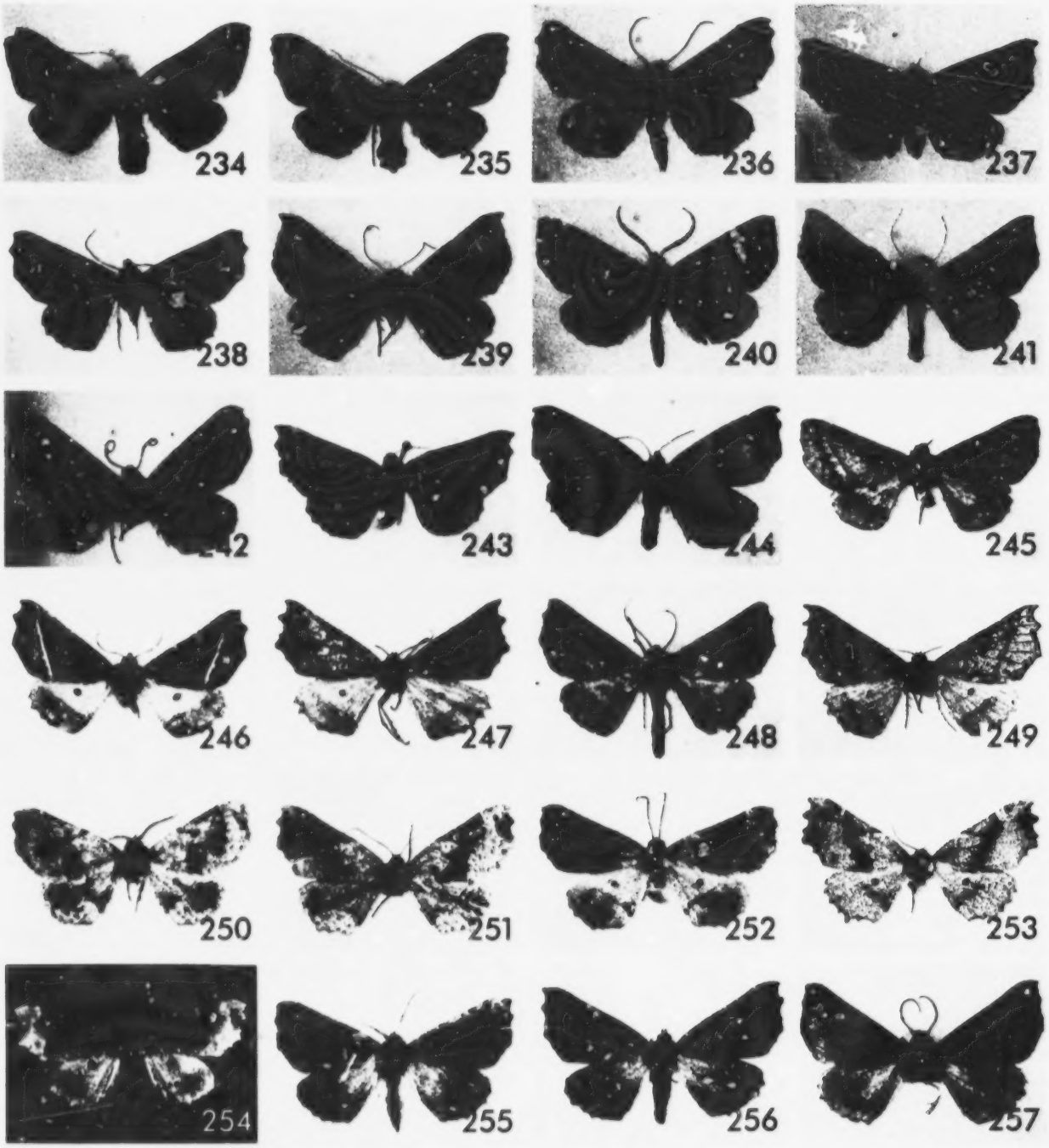

Figures 234-257.--Pero adults: 234, corata, male, and 235, female, Vista Hermosa, Oaxaca, Mexico; 236, charadrea, male, Rio Vermelho, Santa Catarina, Brazil, and 237, female, Castro, Paraná, Brazil; 238, imperfectaria, male, Campo Belo, Rio de Janeiro, Brazil; 239, simplex, female, Sapucay, Paraguarí, Paraguay; 240, poaphilaria, male, São Paulo, Brazil, and 241, female, "St. Catherines," Brazil; 242, mollis, male, Alto da Serra, São Paulo, Brazil, and 243, female, Castro, Paraná, Brazil; 244, geraesa, female, "Minas Gerais," Brazil; 245, rocanaria, male, "Santa Cruz," Brazil; 246, calinaria, male, São Paulo, Brazil, and 247, female, Castro, Paraná, Brazil; 248, crocallaria, male, and 249, female, Castro, Paraná, Brazil; 250, edentaria, male, Alto da Serra, São Paulo, Brazil, and 251, female, "Rio Janeiro," Brazil; 252, paranaria, male, and 253, female, Castro, Paraná, Brazil; 254, flora, male, Castro, Paraná, Brazil; 255, amica, male, Itatiaya, Rio de Janeiro, Brazil, and 256, female, Castro, Paraná, Brazil; 257, inconstans, male, "Rio Janeiro," Brazil.

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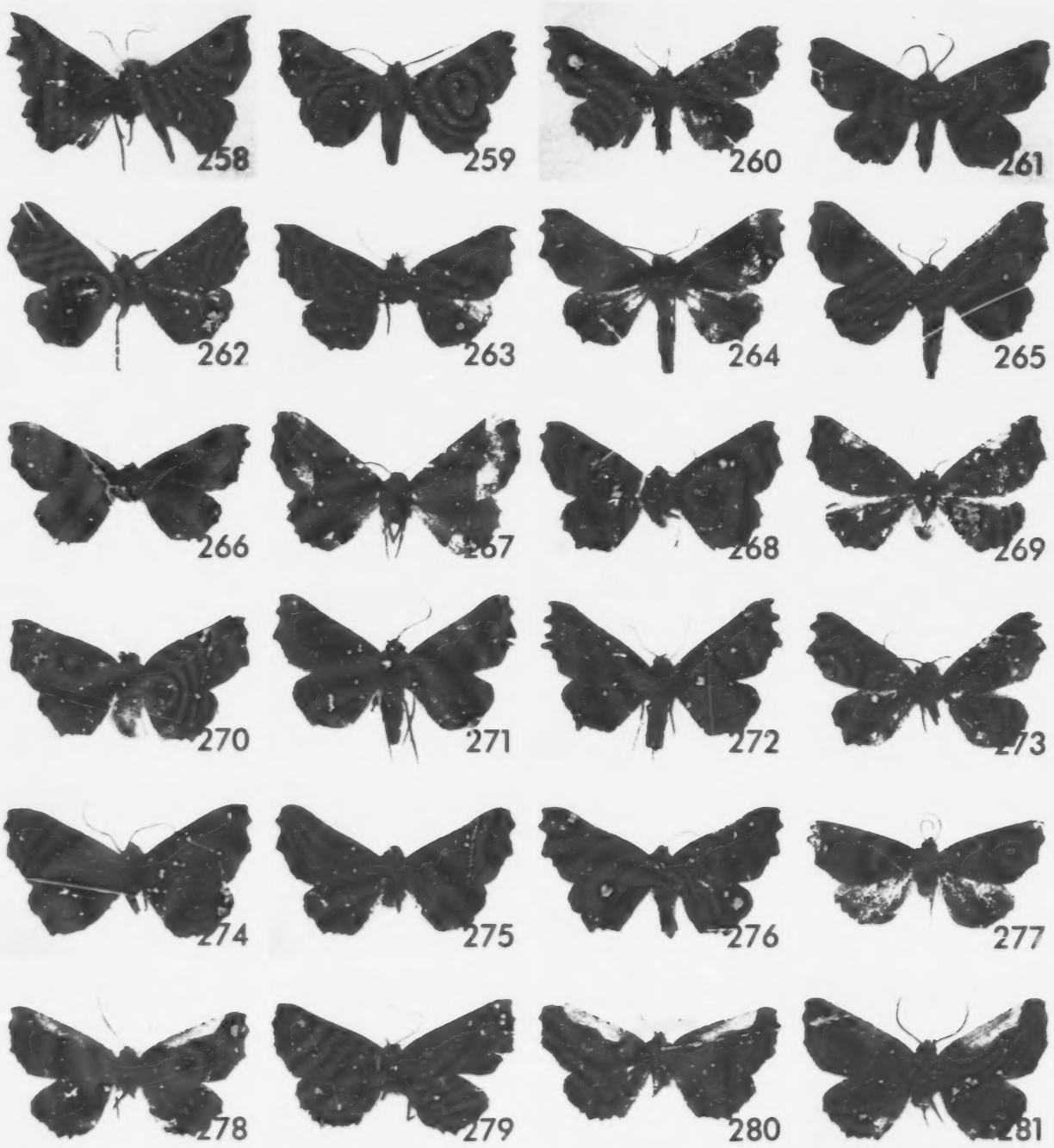

Figures 258-281.--Pero adults: 258, inconstans, female, Q. Cuervos Treinta y Tres, Uruguay; 259, refellaria, male, Tucumán, Argentina, and 260, female, "Rio," Brazil; 261, gonopteraria, male, Nuevo Teutonia, Santa Catarina, Brazil; 262, olivacea, male, Jujuy, Argentina, and 263, female, Tucumán, Argentina; 264, chanchamaya, male, Chanchamayo, Junin, Peru; 265, buckleyi, male, Chapare, Bolivia, and 266, female, Mesopotamia, Antioquia, Colombia; 267, cinerea, male, La Oroya, Puno, Peru; 268, minima, male, "Rio Janeiro," Brazil; 269, externata, male, and 270, female, Castro, Paraná, Brazil; 271, maculicosta, male, Independencia, Paraguay, and 272, female, Nuevo Teutonia, Santa Catarina, Brazil; 273, marcata, male, Quincemil, Cusco, Peru; 274, coreata, male, "Colombie"; 275, ochriscripta, male, and 276, female, Santo Domingo, Puno, Peru; 277, velutina, male, Castro, Paraná, Brazil; 278, habenaria, male, "Rio Janeiro," Brazil, and 279, female, "Minas Geraes," Brazil; 280, kathina, male, "St. Catherines," Brazil; 281, hanebaria, male, Neu Bremen, Rio Laeiss, Santa Catarina, Brazil.

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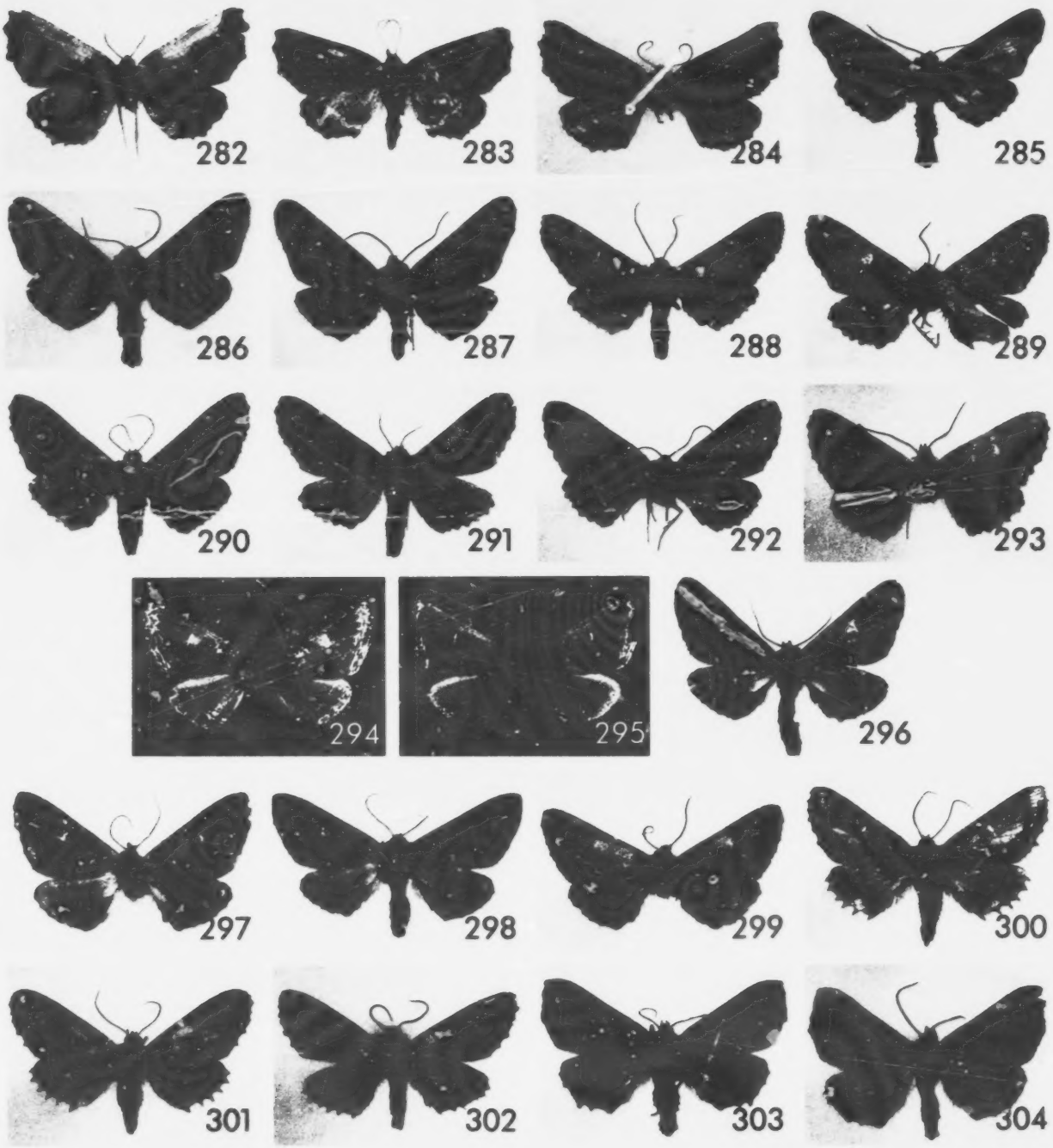

Figures 282-304.--Pero adults: 282, hanebaria, female, Jaragua do Sul, Santa Catarina, Brazil; 283, fea, male, Castro, Paraná, Brazil, and 284, female, Rio Vermelho, Santa Catarina, Brazil; 285, algerna, male, Rancho Grande, Aragua, Venezuela; 286, morula, male, Rancho Grande, Aragua, Venezuela; 287, propinqua, male, Yungas del Palmar, Cochabamba, Bolivia; 288, spina, male, Jalapa, Veracruz, Mexico; 289, pobrata, male, Tuis, Cartago, Costa Rica; 290, mnasilaria, male, Rancho Grande, Aragua, Venezuela; 291, turba, male, Coosnipata, Cusco, Peru; 292, nasala, male, Incachaca, Cochabamba, Bolivia; 293, pala, male, Tochesito, Tolima, Colombia; 294, amniculata, male, Cushi, Huánuco, Peru; 295, mitraria, male, Hacienda Cayandeled, Ecuador; 296, periculosaria, male, Yungas del Palmar, Cochabamba, Bolivia; 297, caliginosa, male, Tochesito, Tolima, Colombia; 298, fawna, male, Torne, Tolima, Colombia; 299, ochreicosta, male, Tochesito, Tolima, Colombia; 300, cyclodaria, male, Incachaca, Cochabamba, Bolivia; 301, xylinaria, male, Rancho Grande, Aragua, Venezuela; 302, isotenes, male, Finca San Pablo, Cundinamarca, Colombia; 303, pretensa, male, Incachaca, Cochabamba, Bolivia; 304, supposa, male, Monte Tolima, Tolima, Colombia.

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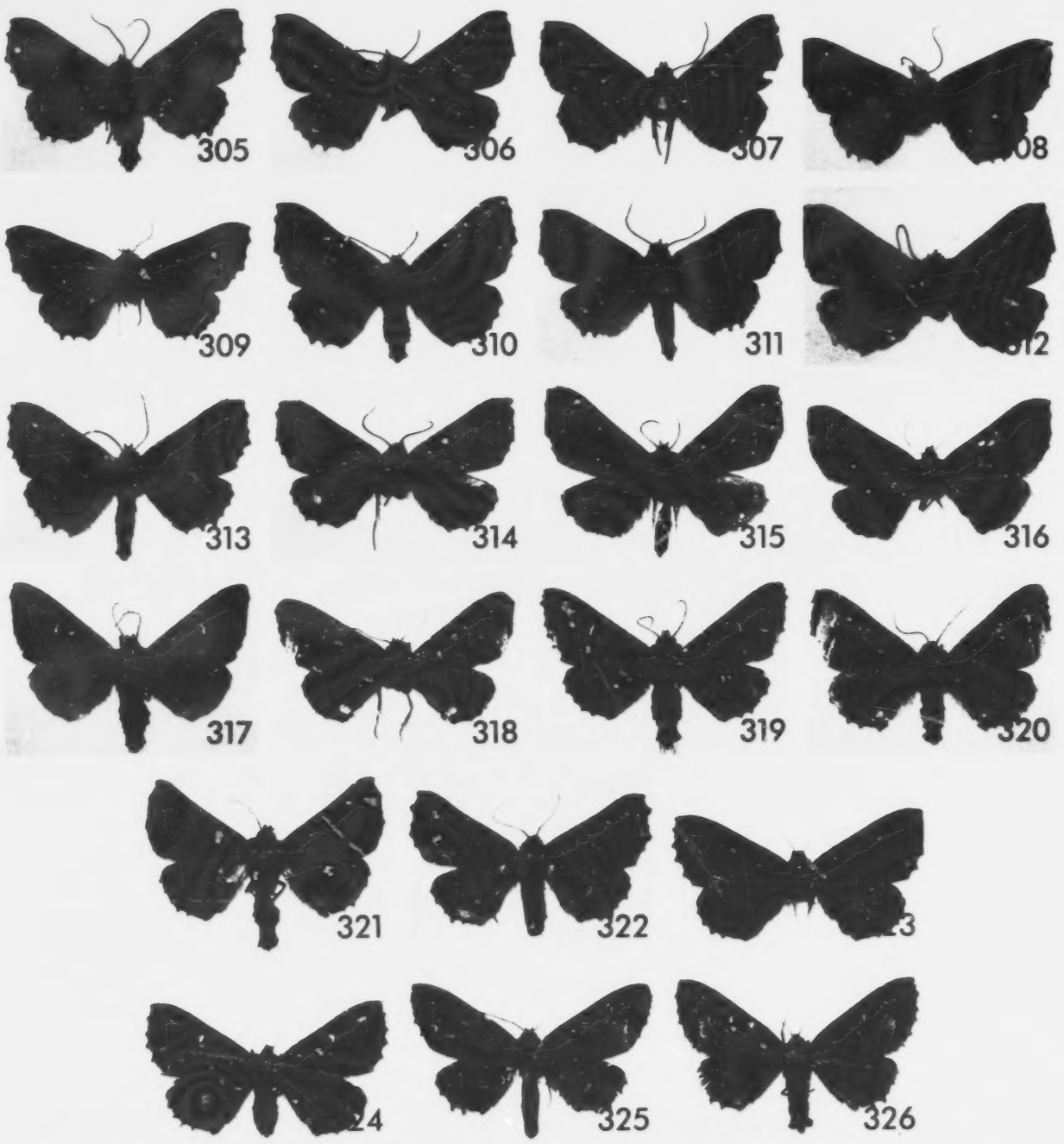

Figures 305-326.--Pero adults: 305, denticulata, male, Rio Topo, Tungurahua, Ecuador; 306, ministrella, male, Canon del Tolima, Tolima, Colombia; 307, cama, male, La Union, Puno, Peru; 308, spada, male, Monte Socorro, Tolima, Colombia; 309, ramulata, male, Oconeque, Puno, Peru, and 310, male, Incachaca, Cochabamba, Bolivia; 311, absenta, male, Tinguri, Puno, Peru; 312, levera, male, Ob. Rio Negro, Vaupés, Colombia; 313, strapa, male, Balzapamba, Bolívar, Ecuador; 314, rosota, male, Orosi, Cartago, Costa Rica; 315, ravida, male, and 316, female, Agualani, Puno, Peru; 317, odonaria, male, Rancho Grande, Aragua, Venezuela; 318, ogmopoea, male, Tingo Maria, Huánuco, Peru; 319, derecha, male, Rancho Grande, Aragua, Venezuela; 320, caustomeris, male, Coosnipata, Cusco, Peru; 321, lindigi, male, Rancho Grande, Aragua, Venezuela, and 322, female, Volcan de Chiriqui, Chiriqui, Panama; 323, parambensis, male, Medina, Boyacá, Colombia, and 324, female, Rancho Grande, Aragua, Venezuela; 325, tabitha, male, Rio Songo, La Paz, Bolivia, and 326, female, Incachaca, Cochabamba, Bolivia.

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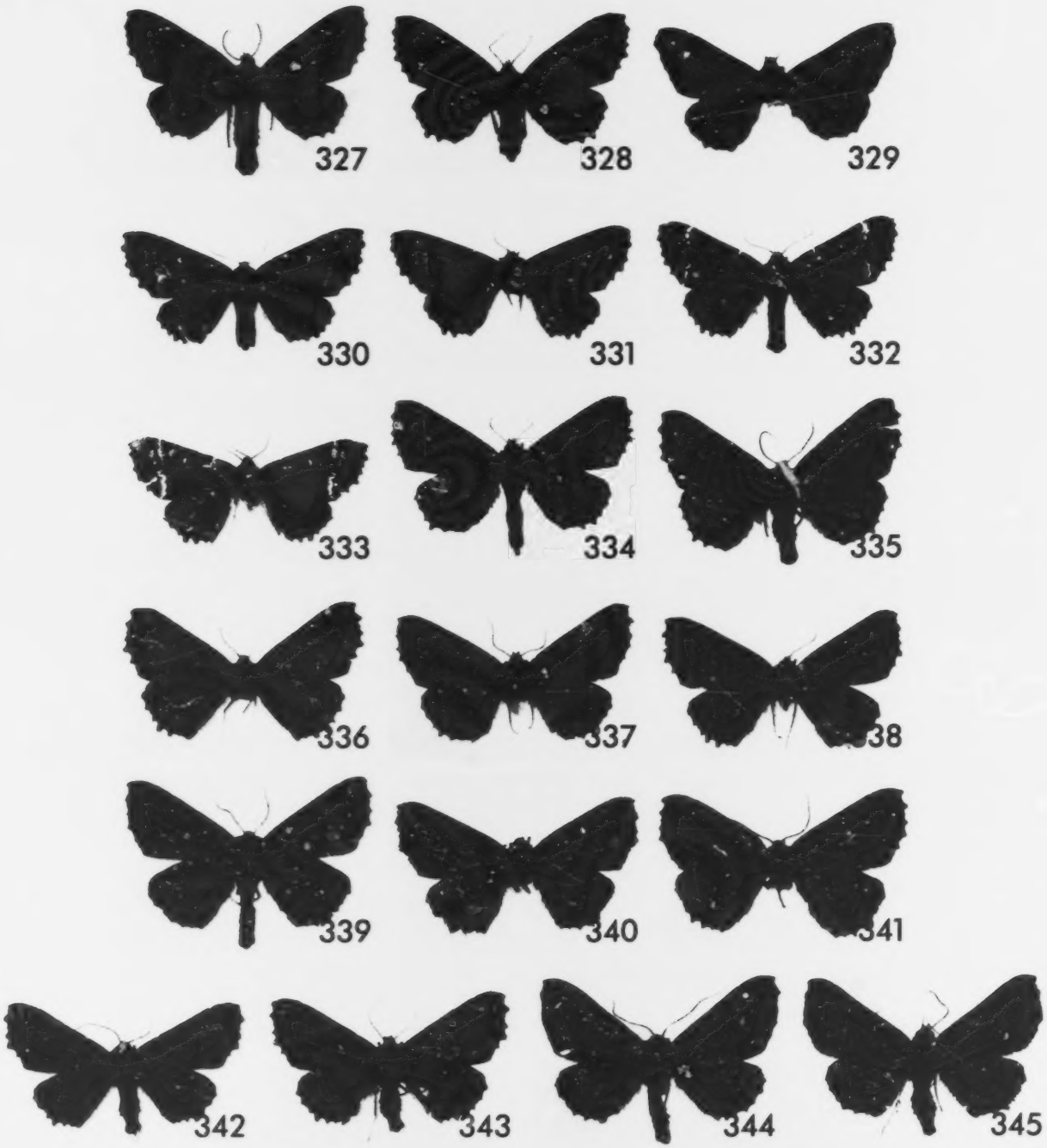

Figures 327-345.--Pero adults: 327, guacamaya, male, and 328, female, Rancho Grande, Aragua, Venezuela; 329, curvifera, male, Huallaga, Loreto, Peru; 330, kaybina, female, Juan Vinas, Cartago, Costa Rica; 331, xylonaria, male, Huambo, Amazonas, Peru; 332, trena, male, San Gabon, Puno, Peru, and 333, female, Santo Domingo, Puno, Peru; 334, alboculata, male, San Gabon, Puno, Peru; 335, refna, male, and 336, female, Incachaca, Cochabamba, Bolivia; 337, alaga, male, and 338, female, Oconeque, Puno, Peru; 339, inferna, male, Agualani, Puno, Peru, and 340, female, Limbani, Puno, Peru; 341, dunca, male, Monte Tolima, Tolima, Colombia; 342, caerula, male, Cerro Pelon, Oaxaca, Mexico; 343, verda, male, Lagos del Montebello, Chiapas, Mexico; 344, heralda, male, Orosi, Cartago, Costa Rica; 345, kayei, male, Hardware Gap, Jamaica.

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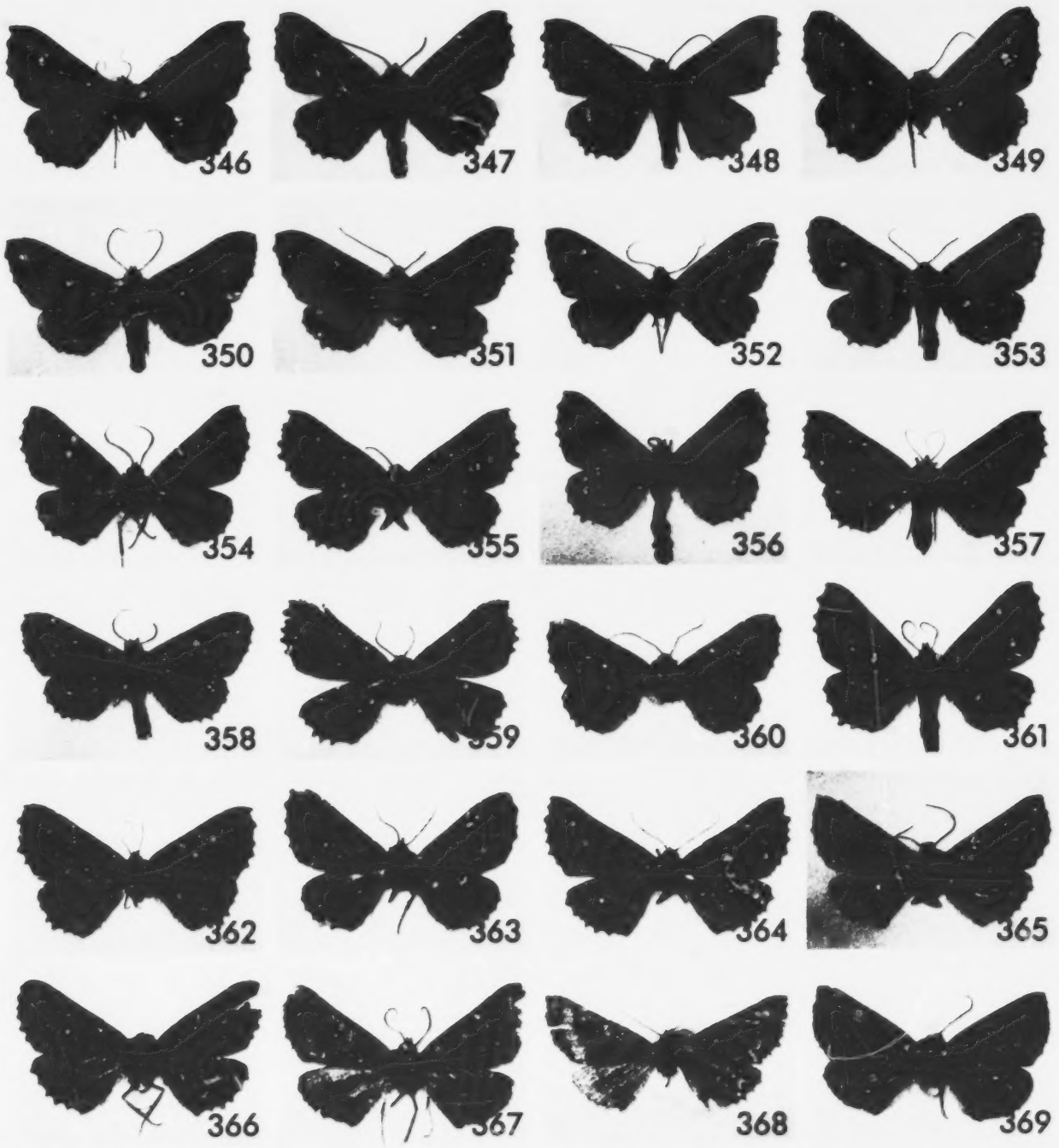

Figures 346-369.--Pero adults: 346, kayei, female, Hardware Gap, Jamaica; 347, asterodia, male, Baleu, Alta Verapaz, Guatemala; 348, dularia, male, Middlesex, British Honduras; 349, hoedularia, male, Nova Teutonia, Santa Catarina, Brazil; 350, spectrata, male, Zamora, Ecuador; 351, participa, male, Rio Songo, La Paz, Bolivia; 352, lucena, male, R. Cristal Mayu, Chapare, Bolivia; 353, latifascia, male, R. Cristal Mayu, Chapare, Bolivia; 354, sula, male, and 355, female, Tucumán, Argentina; 356, mathilda, male, Yungas del Palmar, Cochabamba, Bolivia, and 357, female, Incachaca, Cochabamba, Bolivia; 358, homodoxa, male, and 359, female, Santo Domingo, Puno, Peru; 360, semiusta, male, La Oroya, Puno, Peru; 361, brynhilda, male, Yungas del Palmar, Cochabamba, Bolivia, and 362, female, Oconeque, Puno, Perú; 363, hunaca, male, Quiroz, Peru; 364, colaloa, female, El Siambon, Tucumán, Argentina; 365, cocha, male, and 366, female, Incachaca, Cochabamba, Bolivia; 367, inca, male, and 368, female, Cochabamba, Bolivia; 369, jonesaria, male, Castro, Paraná, Brazil.

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Figures 370-393.--Pero adults: 370, jonesaria, female, Castro, Paraná, Brazil; 371, neuquena, male, Neuquen, Argentina; 372, minopenaria, male, Del Viso, Buenos Aires, Argentina; 373, scotica, male, Casupa, Florida, Uruguay; 374, curla, male, Pelotas, Rio Grande do Sul, Brazil; 375, castraria, male, Castro, Paraná, Brazil; 376, ochriplaga, male, Lima-Matucana, Peru; 377, acopa, male, Acopampa, Peru; 378, geminipuncta, male, Huancabamba, Pasco, Peru; 379, obtusaria, male, Callao, Lima, Peru; 380, consimilis, male, Huacapistana, Junin, Peru; 381, galea, male, Huigra, Chimborazo, Ecuador, and 382, female, Guallabamba, Pichincha, Ecuador; 383, erubescens, male, Loja, Loja, Ecuador, and 384, male, Angasmarca, Peru, and 385, female, Cochabamba, Bolivia; 386, matucana, male, Verrugas, Lima, Peru, and 387, female, Trujillo, Peru; 388, cinnamomina, female, Lima-Chanchamayo, Peru; 389, atridisca, male, Angasmarca, Peru; 390, corda, male, Pacho, Cundinamarca, Colombia; 391, cola, male, "Colombie"; 392, barbarata, male, Santa Barbara, Ecuador; 393, angasmarca, male, Angasmarca, Peru.

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Figures 394-416.--Pero adults: 394, torna, male, Torne, Tolima, Colombia; 395, tabacona, male, Tabaconas River, Peru; 396, rata, male, Trujillo, Peru; 397, gota, male, Bogotá, Cundinamarca, Colombia; 398, gamuza, male, El Monje, Loja, Ecuador; 399, sinalba, male, Huacapistana, Junin, Peru; 400, vulpecula, male, Huancabamba, Pasco, Peru; 401, lara, male, Finca San Pablo, Cundinamarca, Colombia, and 402, female, "Colombia"; 403, variaria, male, Newcastle, Jamaica, and 404, female, "Jamaica"; 405, attagena, female, Huacapistana, Junin, Peru; 406, beatricaria, male, Incachaca, Cochabamba, Bolivia; 407, pincha, male, Monte Tolima, Colombia; 408, tricaria, male, La Oroya, Puno, Peru; 409, spongiata, male, Tinguri, Puno, Peru; 410, longisecta, male, Jaragua do Sul, Santa Catarina, Brazil, and 411, female, Ypiranga, São Paulo, Brazil; 412, fortunata, male, Pampaconas River, Peru, and 413, female, R. Tanampaya, Bolivia; 414, unfortunata, male, and 415, female, Incachaca, Cochabamba, Bolivia; 416, angulosa, male, Agualani, Puno, Peru.

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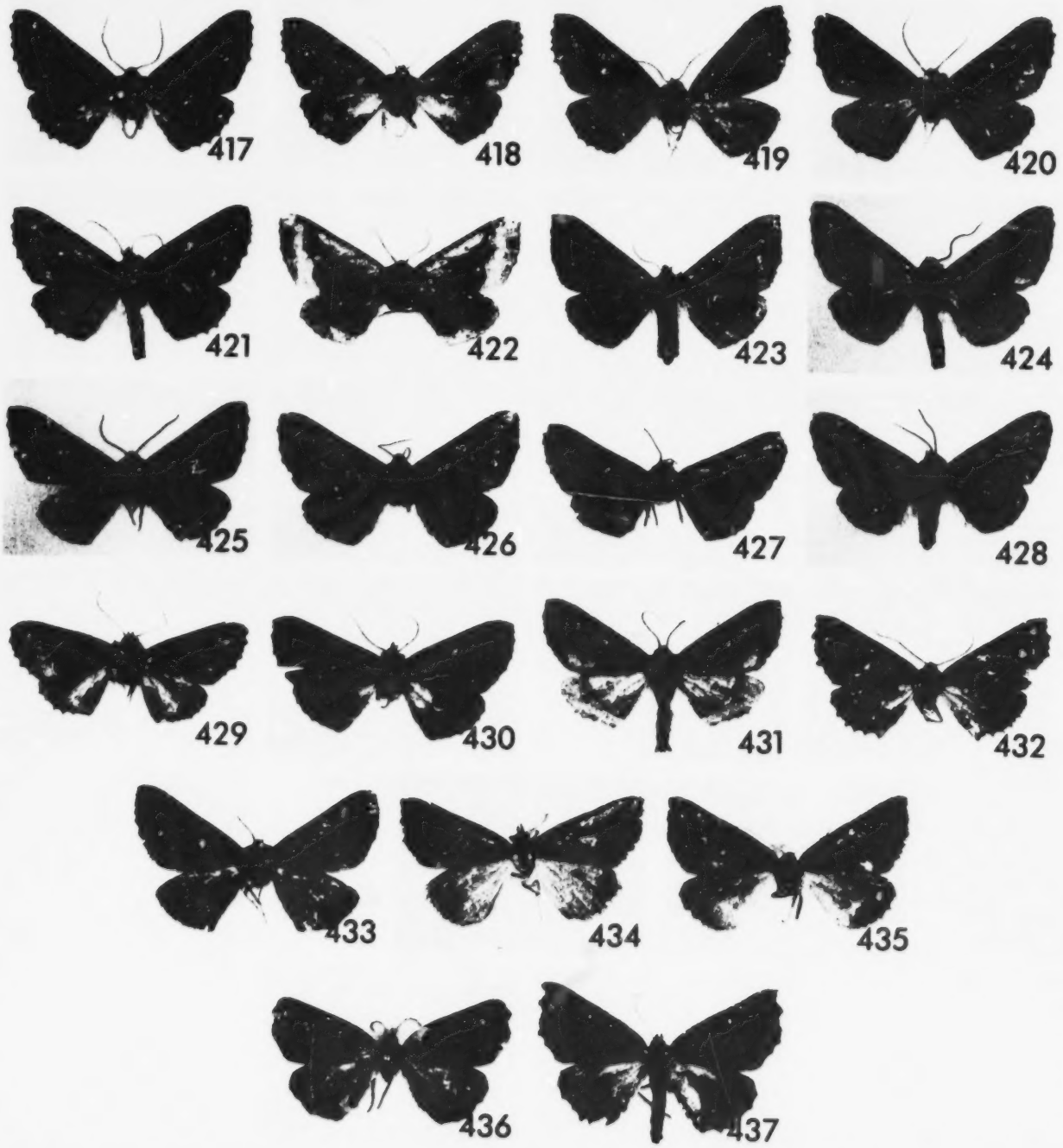

Figures 417-437.--Pero adults: 417, subangulosa, male, Incachaca, Cochabamba, Bolivia; 418, converga, male, and 419, female, Incachaca, Cochabamba, Bolivia; 420, tolima, male, Monte Tolima, Tolima, Colombia; 421, alticola, male, Oconeque, Puno, Peru; 422, messidora, male, "Bolivia," and 423, female, Incachaca, Cochabamba, Bolivia; 424, fraterna, male, Jepelacio, Peru, and 425, female, Finca San Pablo, Cundinamarca, Colombia; 426, crepera, male, Monte Socorro, Tolima, Colombia, and 427, female, "Colombia"; 428, scitaria, male, Palanda, Zamora, Ecuador; 429, elmonjensis, male, El Monje, Loja, Ecuador; 430, lepa, male, Monte Tolima, Tolima, Colombia; 431, lusa, male, and 432, female, Tucumán, Argentina; 433, boneta, male, Huancabamba, Pasco, Peru; 434, derga, male, "Rio," Brazil; 435, siambona, female, Siambon, Tucumán, Argentina; 436, perioda, male, "Brazil," and 437, female, Jaragua do Sul, Santa Catarina, Brazil.

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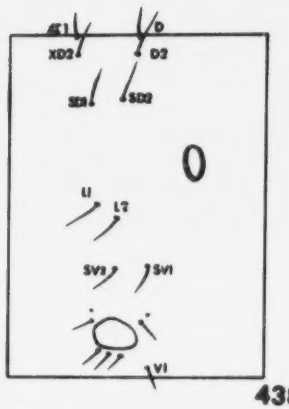

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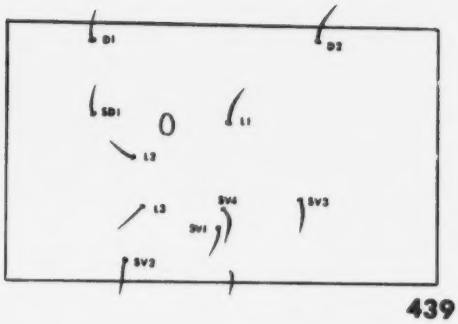

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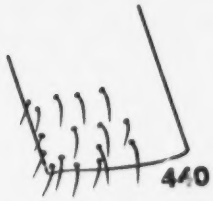

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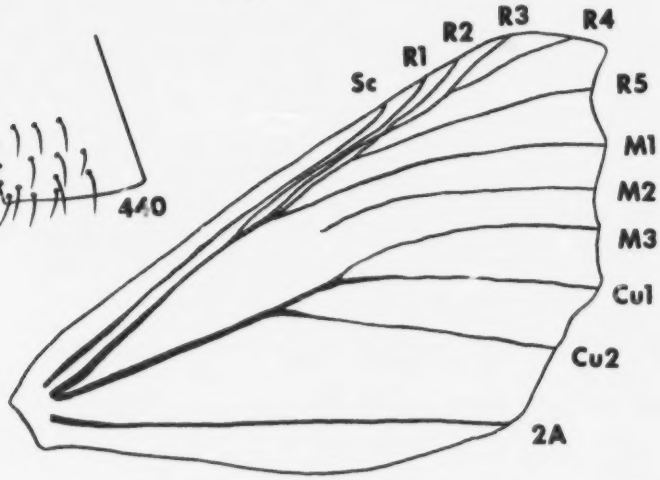

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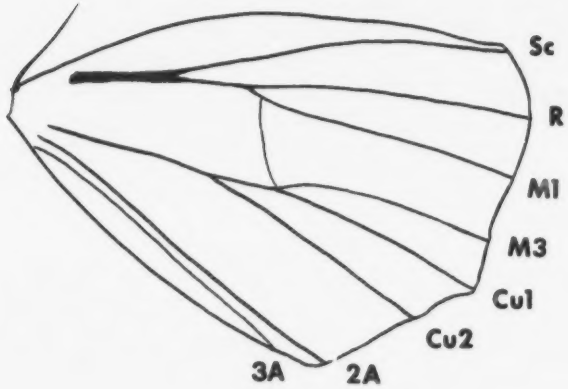

Figures 438-441.--Pero occidentalis setal pattern of last instar larva: 438, Prothorax; 439, first abdominal segment; 440, sixth abdominal segment proleg. 441, P. honestaria wing venation.

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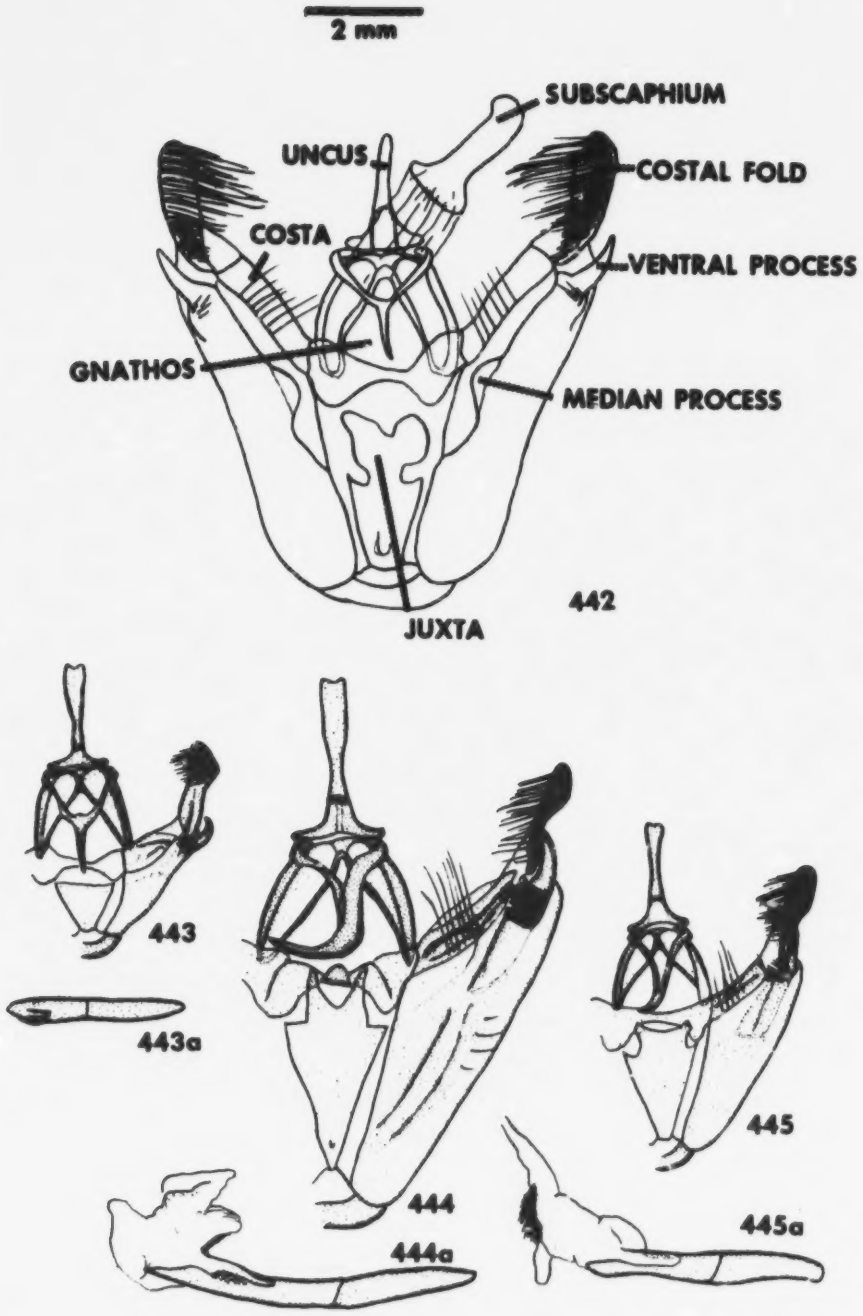

Figures 442-445.—Pero male genitalia: 442, Hypothetical species with parts labeled as used in this revision; 443, meskaria, 46 miles E. Ajo, Arizona, and 443a, aedeagus; 444, estapa, Paso San Juan, Veracruz, Mexico, and 444a, aedeagus; 445, radiosaria, Zacualpan, Mexico, and 445a, aedeagus.

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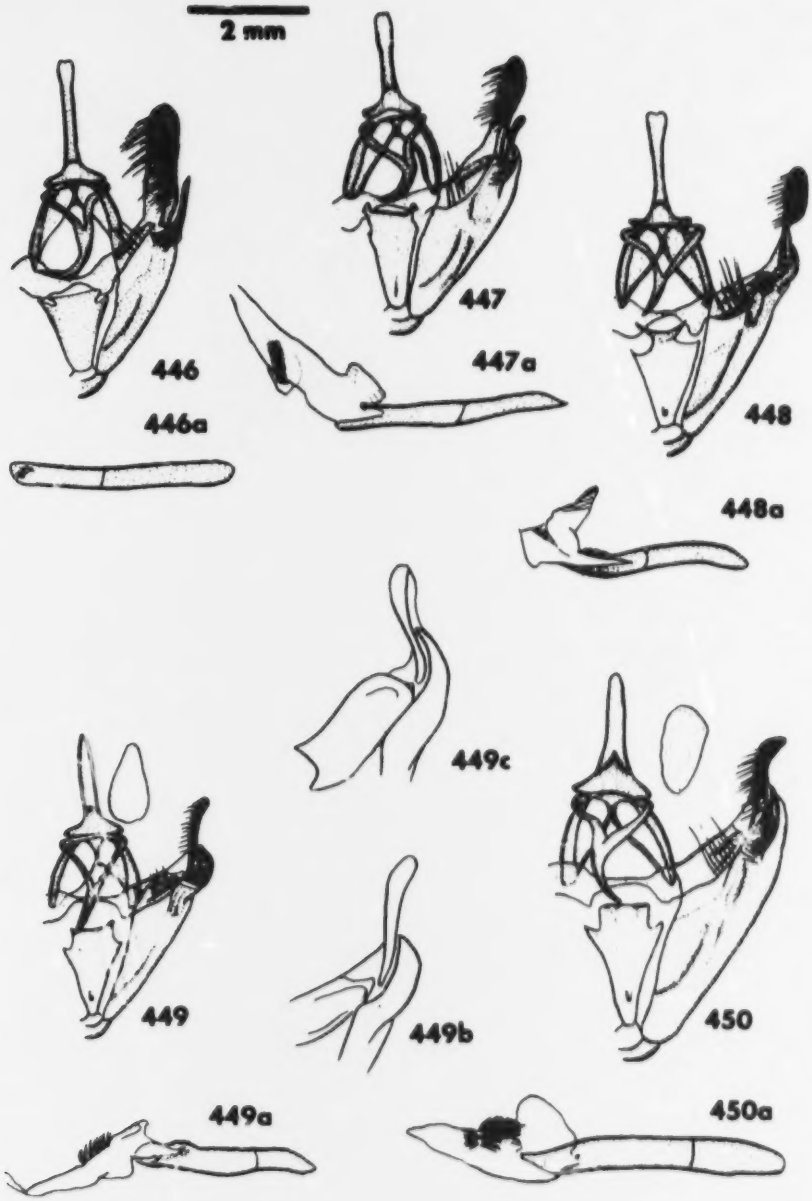

Figures 446-450.--Pero male genitalia: 446, inviolata, San Andreas Canyon, California, and 446a, aedeagus; 447, rava, Bogotá, Cundinamarca, Colombia, and 447a, aedeagus; 448, pima, Baboquivari Mts., Arizona, and 448a, aedeagus; 449, aurunca, Orizaba, Veracruz, Mexico, and 449a, aedeagus, and 449b, detail of tip of right valve, and 449c, detail of tip of right valve of specimen from Carillo, Costa Rica; 450, punta, British Honduras, and 450a, aedeagus.

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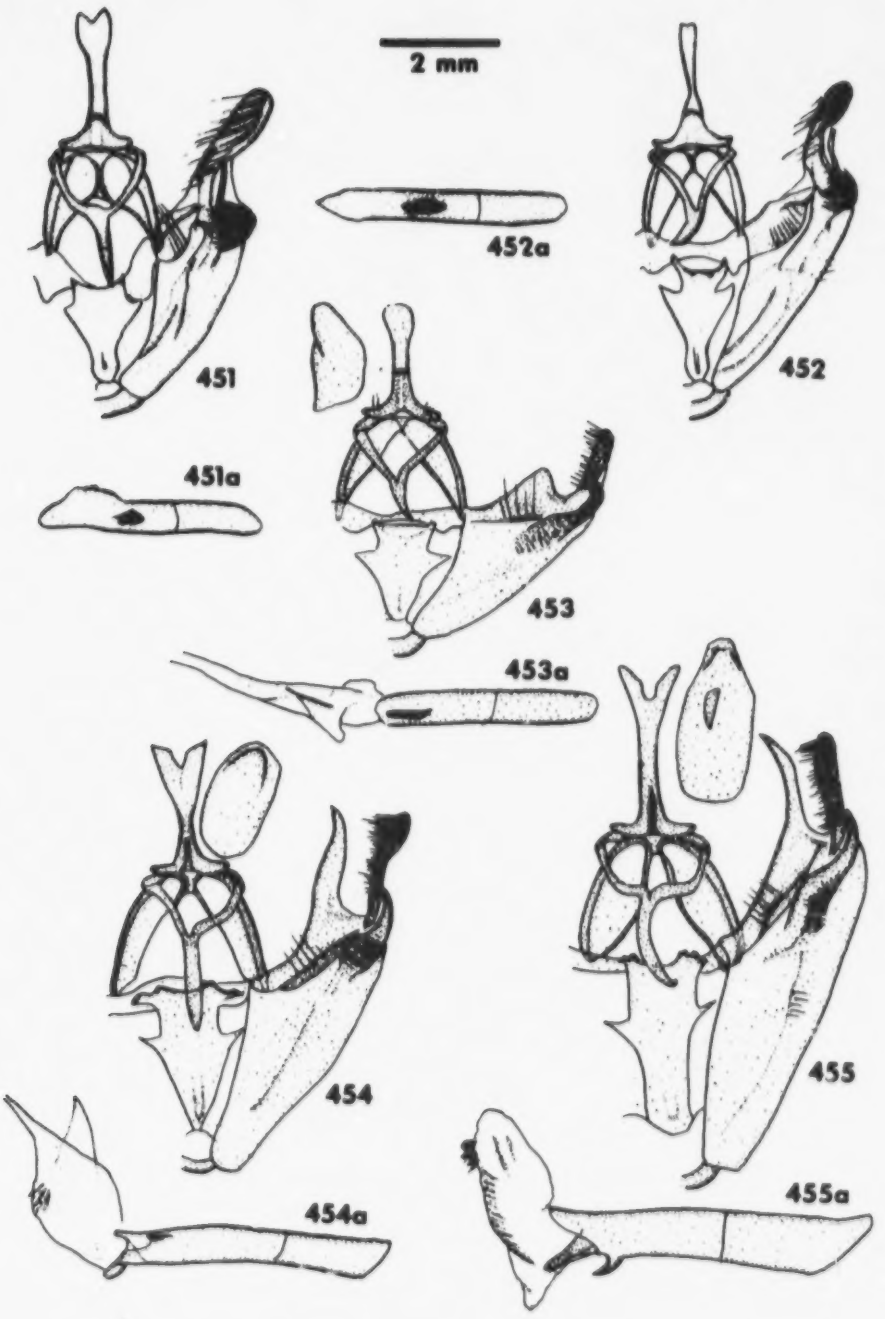

Figures 451-455.—Pero male genitalia: 451, flaviscaria, Redington, Arizona, and 451a, aedeagus; 452, salicaaria, Oneco, Florida, and 452a, aedeagus; 453, uniformis, Pelotas, Rio Grande do Sul, Brazil, and 453a, aedeagus; 454, lignata, Chanchamayo, Junin, Peru, and 454a, aedeagus; 455, afuera, Tamazunchale, San Luis Potosi, Mexico, and 455a, aedeagus.

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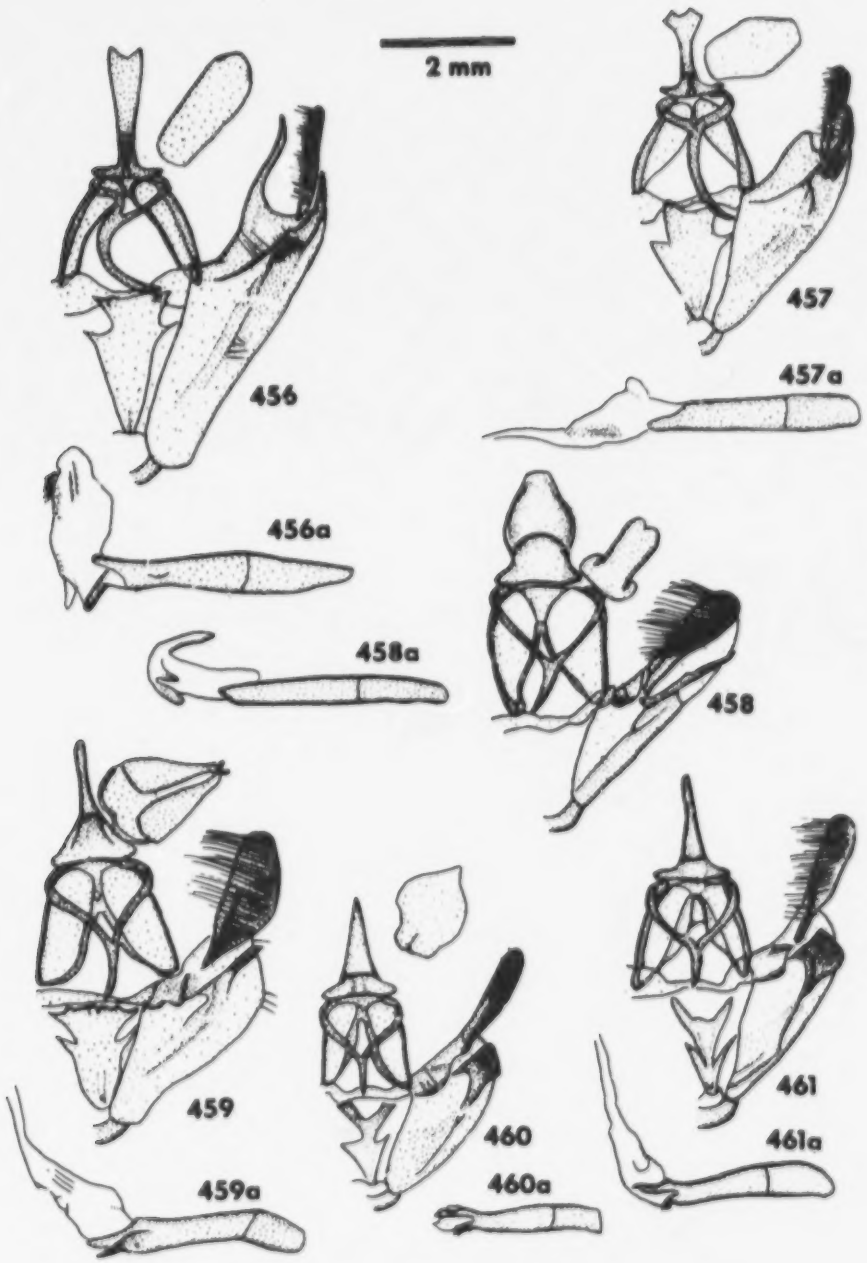

Figures 456–461.—Pero male genitalia: 456, obscurior, "Colombia", and 456a, aedeagus; 457, nata, São Paulo de Olivença, Amazonas, Brazil, and 457a, aedeagus; 458, sinetraria, Matto Grosso, Brazil, and 458a, aedeagus; 459, nyctopa, Rio Grande, British Honduras, and 459a, aedeagus; 460, pelota, Pelotas, Rio Grande do Sul, Brazil, and 460a, aedeagus; 461, sprata, Tucumán, Argentina, and 461a, aedeagus.

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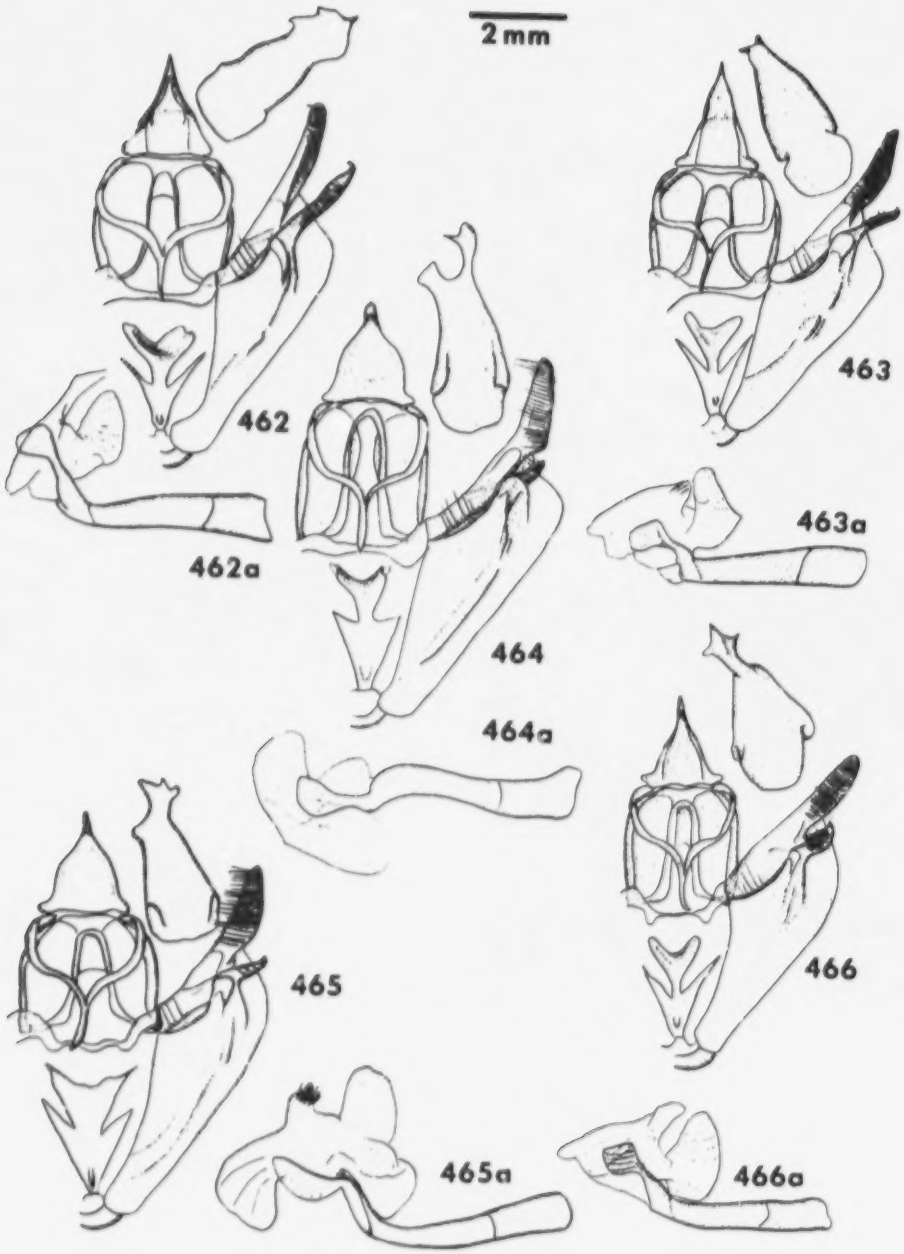

Figures 462-466.—Pero male genitalia: 462, chapela, Cayuga, Izabal, Guatemala, and 462a, aedeagus; 463, anceta, Chanchamayo, Junin, Peru, and 463a, aedeagus; 464, teleclyta, Chaquimayo, Puno, Peru, and 464a, aedeagus; 465, yahua, Yahuarmayo, Puno, Peru, and 465a, aedeagus; 466, pequena, Orizaba, Veracruz, Mexico, and 466a, aedeagus.

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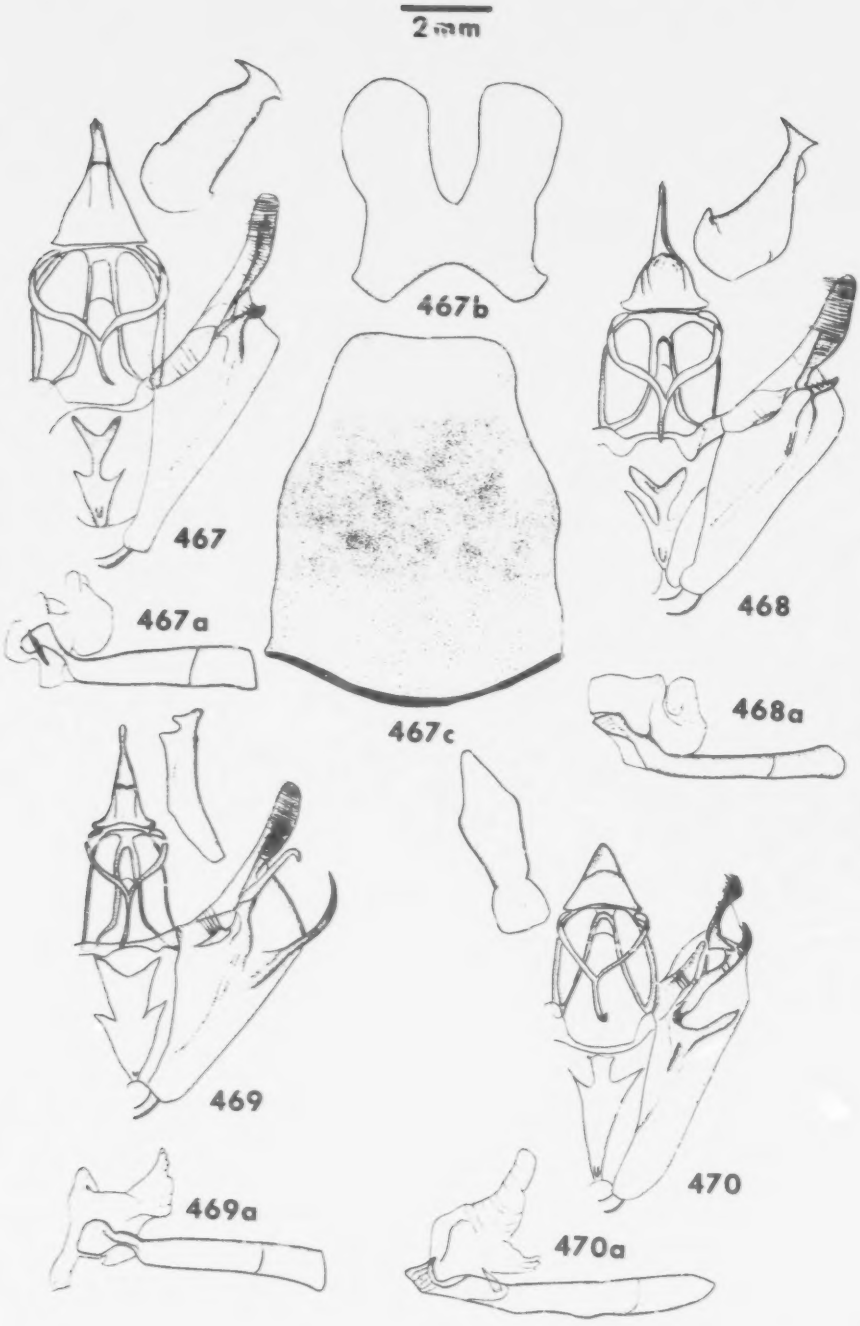

Figures 467-470.--Pero male genitalia: 467, jimenezaria, San Esteban Valley, Carabobo, Venezuela, and 467a, aedeagus, and 467b, eighth sternite, and 467c, eighth tergite; 468, orosata, Tuis, Cartago, Costa Rica, and 468a, aedeagus; 469, nigra, Rio Curray to Rio Napo, Peru, and 469a, aedeagus; 470, Lathanaria, R. Cristal Mayu, Chapare, Bolivia, and 470a, aedeagus.

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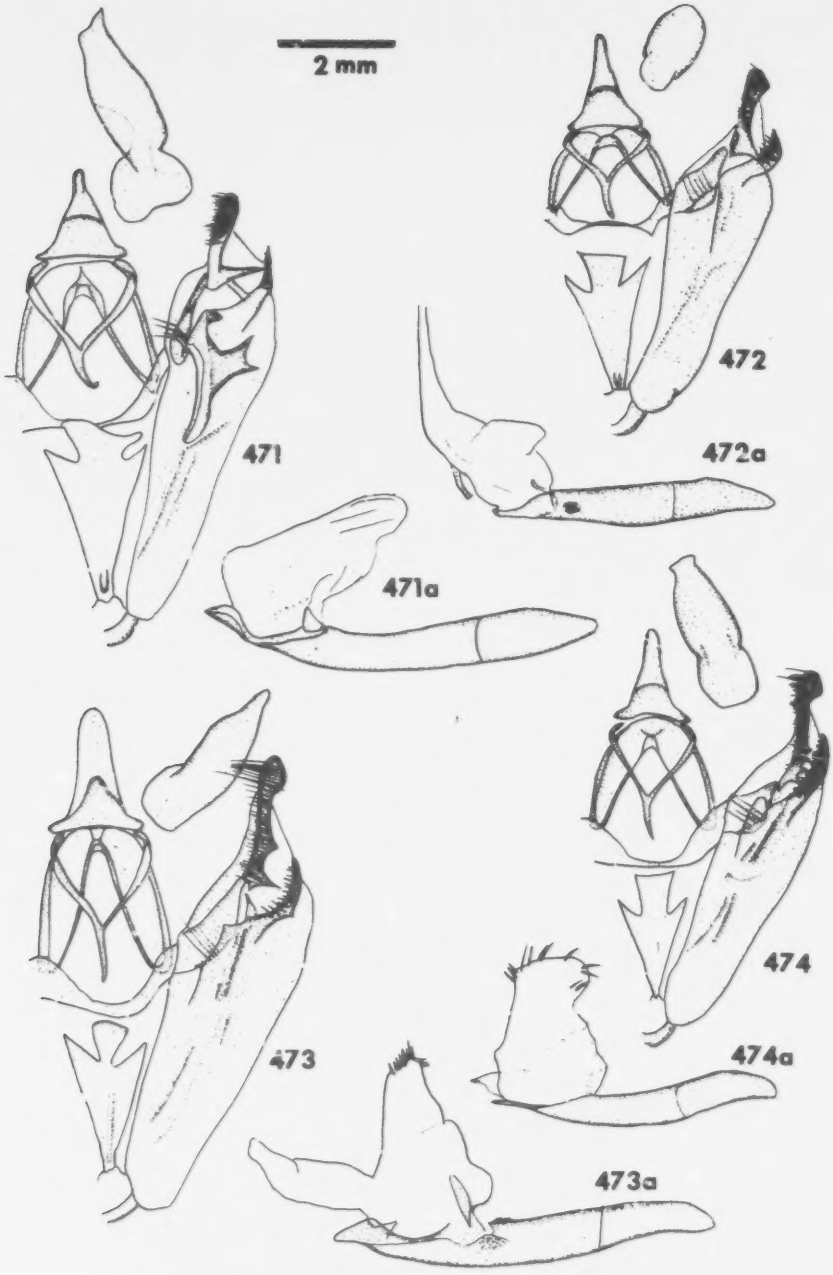

Figures 471-474.--Pero male genitalia: 471, leptoina, Monte Cristo, Amazonas, Brazil, and 471a, aedeagus; 472, disjuncta, Rockstone, Guyana, and 472a, aedeagus; 473, stuposaria, Joinville, Santa Catarina, Brazil, and 473a, aedeagus; 474, immundaria, Pelotas, Rio Grande do Sul, Brazil, and 474a, aedeagus.

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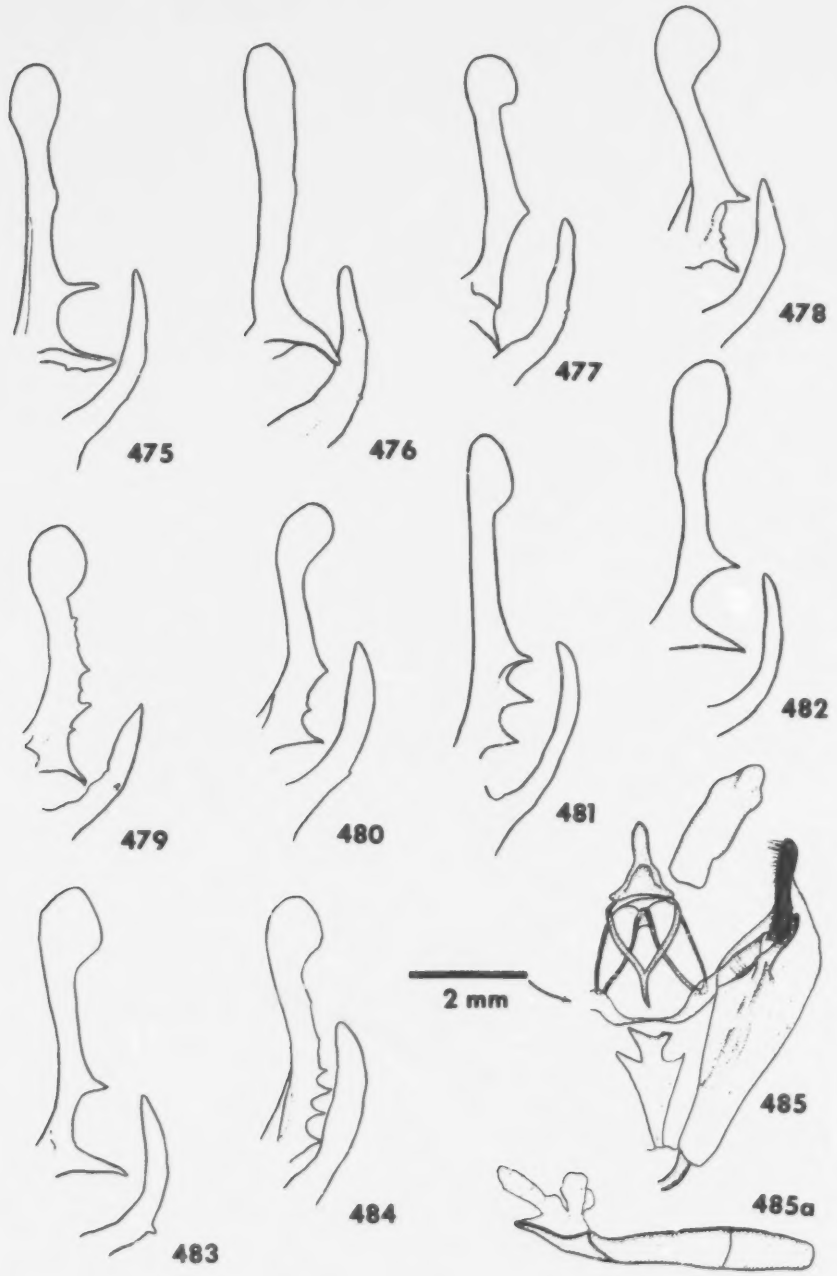

Figures 475-485.--Pero male genitalia: 475, stuposaria, Rio Trinidad, Panama, costal fold, and 476, R. Cristal Mayu, Chapare, Bolivia, costal fold, and 477, São Paulo de Olivença, Amazonas, Brazil, costal fold, and 478, Cayenne, French Guiana, costal fold, and 479, St. Laurent, Maroni, French Guiana, costal fold, and 480, Pará, Brazil, costal fold, and 481, Uberaba, Minas Gerais, Brazil, costal fold, and 482, Santa Cruz, Brazil, costal fold, and 483, Joinville, Santa Catarina, Brazil, costal fold; 484, immundaria, Pelotas, Rio Grande do Sul, Brazil, costal fold; 485, parva, São Paulo, Brazil, and 485a, aedeagus.

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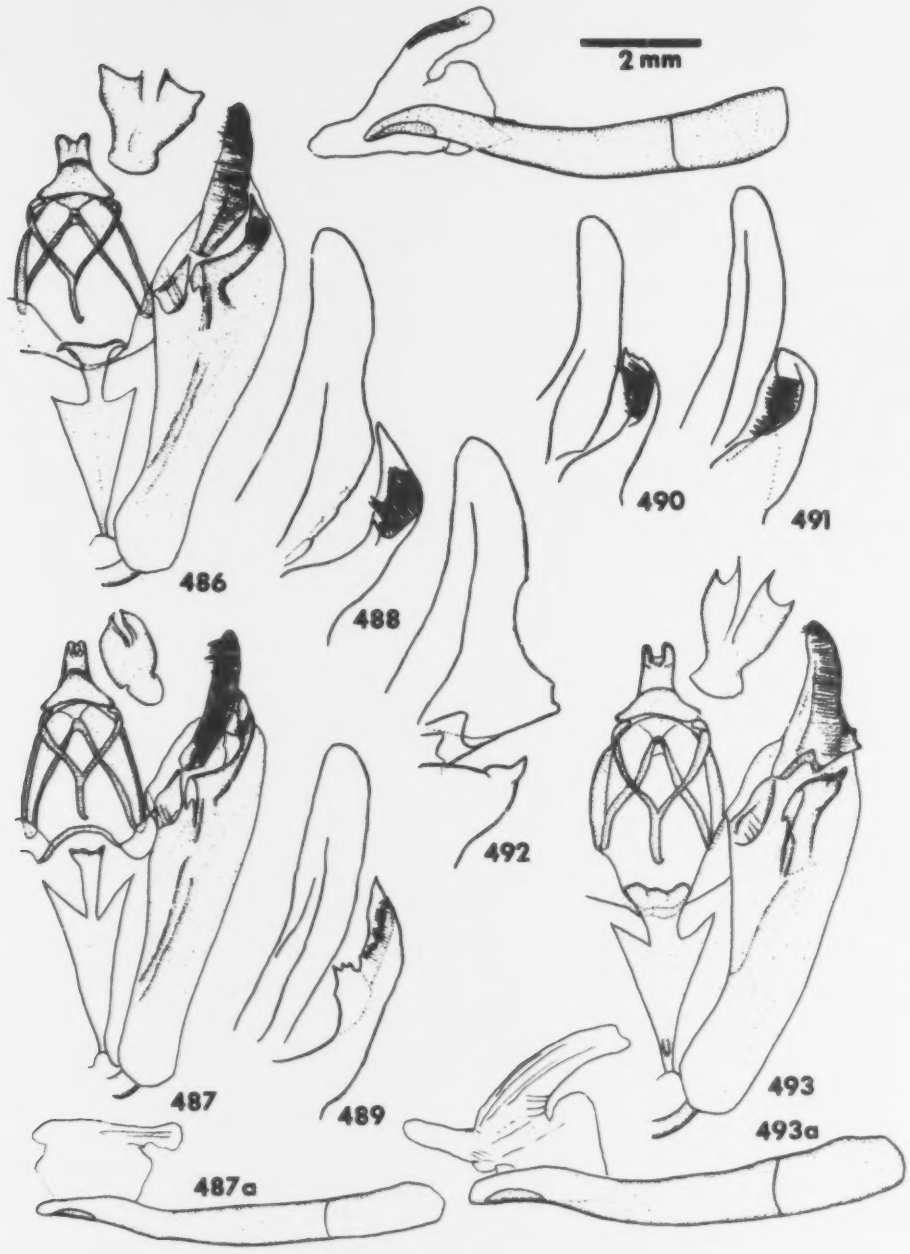

Figures 486-493.--Pero male genitalia: 486, protea, Kartabo, Guyana, and 486a, aedeagus, and 487, Barro Colorado Island, Panama, and 487a, aedeagus, and 488, Kartabo, Guyana, costal fold, and 489, Barro Colorado Island, Panama, costal fold, and 490, Cayuga, Izabal, Guatemala, costal fold, and 491, Alto da Serra, São Paulo, Brazil, costal fold; 492, incompta, Yahuarmayo, Puno, Peru, costal fold, and 493, Yahuarmayo, Puno, Peru, and 493a, aedeagus.

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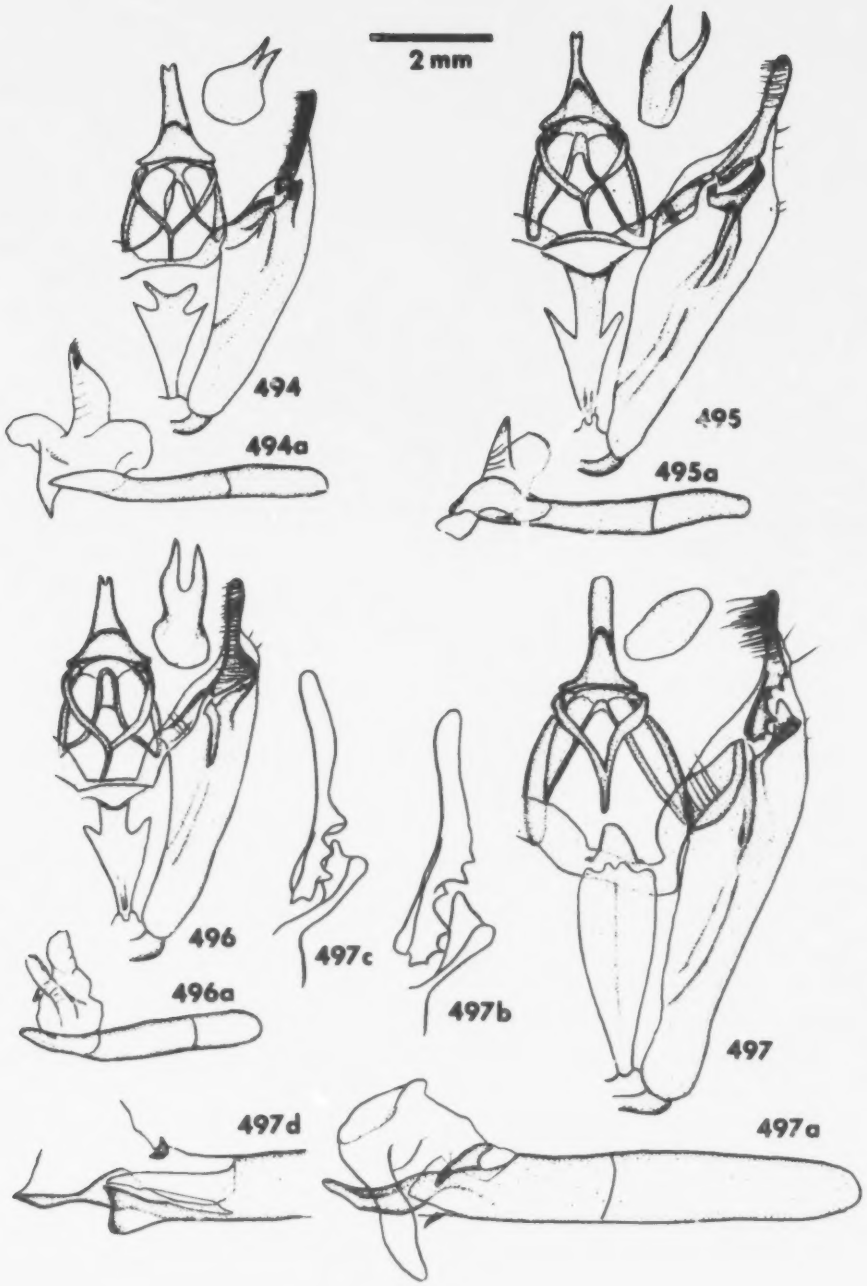

Figures 494-497.--Pero male genitalia: 494, foeda, St. Laurent, Maroni, French Guiana, and 494a, aedeagus; 495, lactelineata, Pumayaca, Peru, and 495a, aedeagus; 496, cristila, R. Cristal Mayu, Chaparé, Bolivia, and 496a, aedeagus; 497, exquisita, Teffe a Tonantins, Amazonas, Brazil, and 497a, aedeagus, and 497b, costal fold, and 497c, Misantla, Veracruz, Mexico, costal fold, and 497d, tip of aedeagus.

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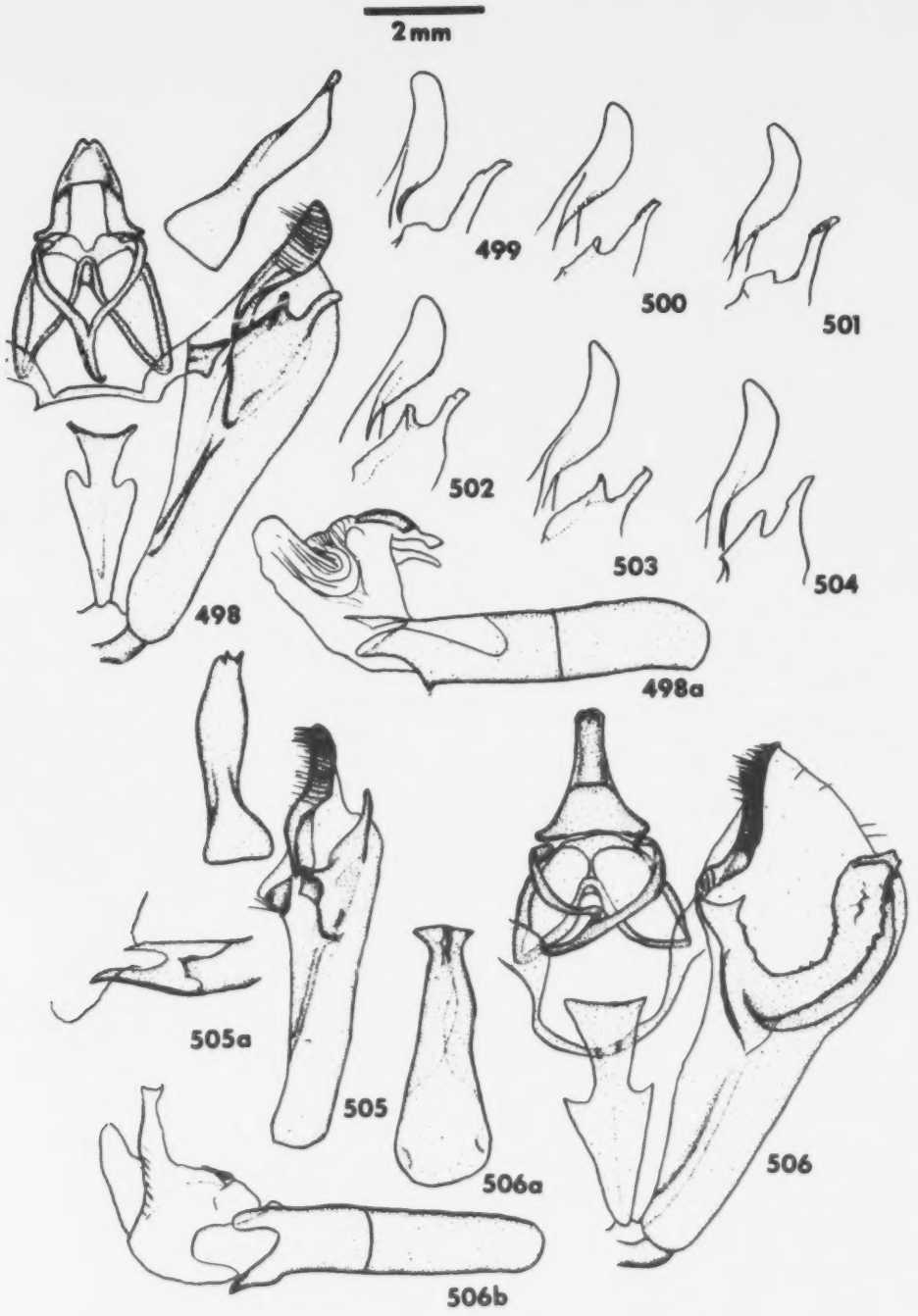

Figures 498-506.--Pero male genitalia: 498, coronata, Omai, Guyana, and 498a, aedeagus, and 499, Middlesex, British Honduras, costal fold, and 500, Quirigua, Guatemala, costal fold, and 501, Chejel, Guatemala, costal fold, and 502, Omai, Guyana, costal fold, and 503, Joinville, Santa Catarina, Brazil, costal fold, and 504, Satipo, Junin, Peru, costal fold; 505, mephistola, "Sta. Catherina," Brazil, and 505a, aedeagus; 506, duida, Mt. Duida, Amazonas, Venezuela, and 506a, subscaphium, and 506b, aedeagus.

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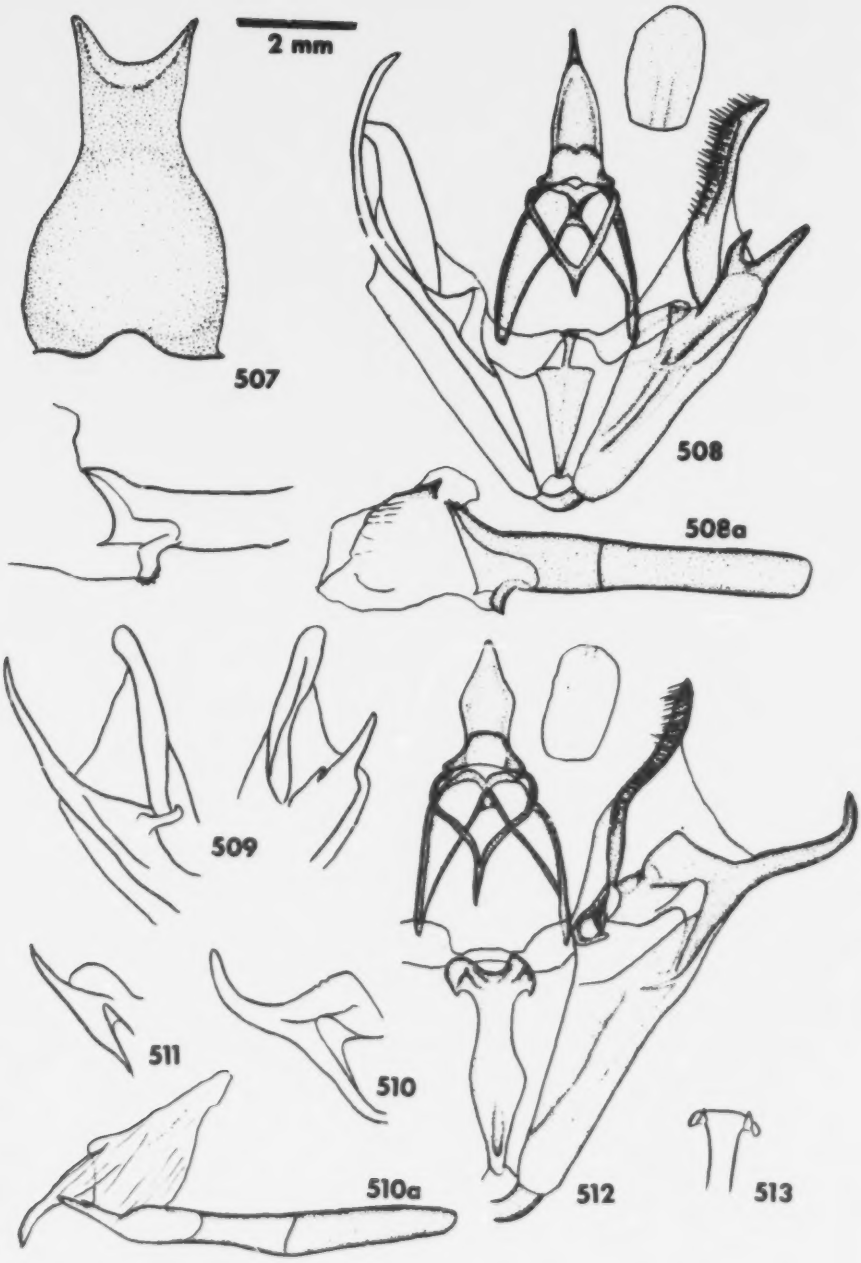

Figures 507-513.--Pero male genitalia: 507, duida, Mt. Duida, Amazonas, Venezuela, eighth sternite; 508, semibrunnea, "Bolivia," and 508a, aedeagus, and 509, Pará, Brazil, tips of right and left valves; 510, plenilunata, El Porvenir, Peru, and 510a, aedeagus, and 511, Loja, Ecuador, ventral process of left valve, and 512, El Porvenir, Peru, ventral process of left valve, and 513, Loja, Ecuador, juxta.

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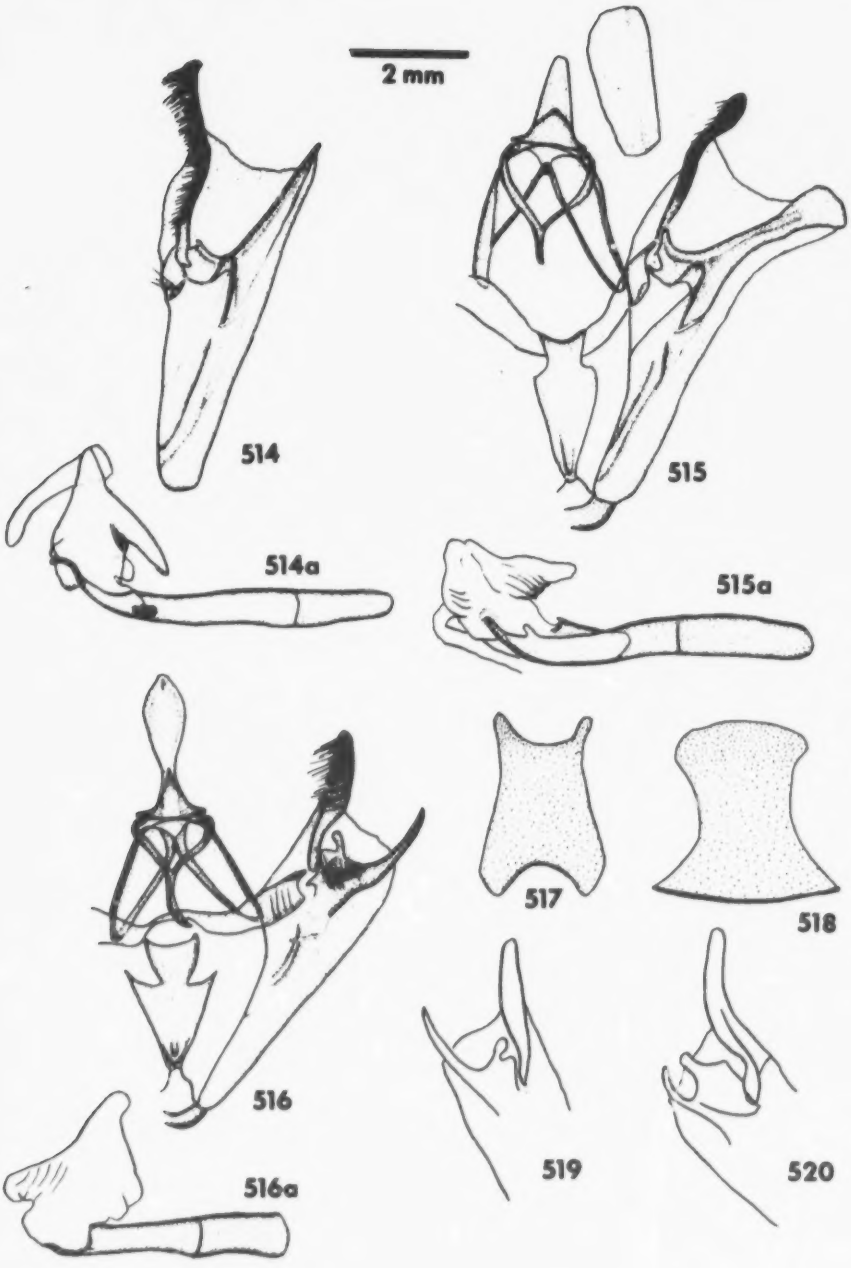

Figures 514-520.--Pero male genitalia: 514, dichomensis, Santo Domingo, Puno, Peru, and 514a, aedeagus; 515, cerra, Huancabamba, Pasco, Peru, and 515a, aedeagus; 516, lustraria, "Brazil," and 516a, aedeagus, and 517, eighth sternite, and 518, eighth tergite, and 519, detail of left valve; 520, pinsa, R. Cristal Mayu, Chapare, Bolivia, detail of left valve.

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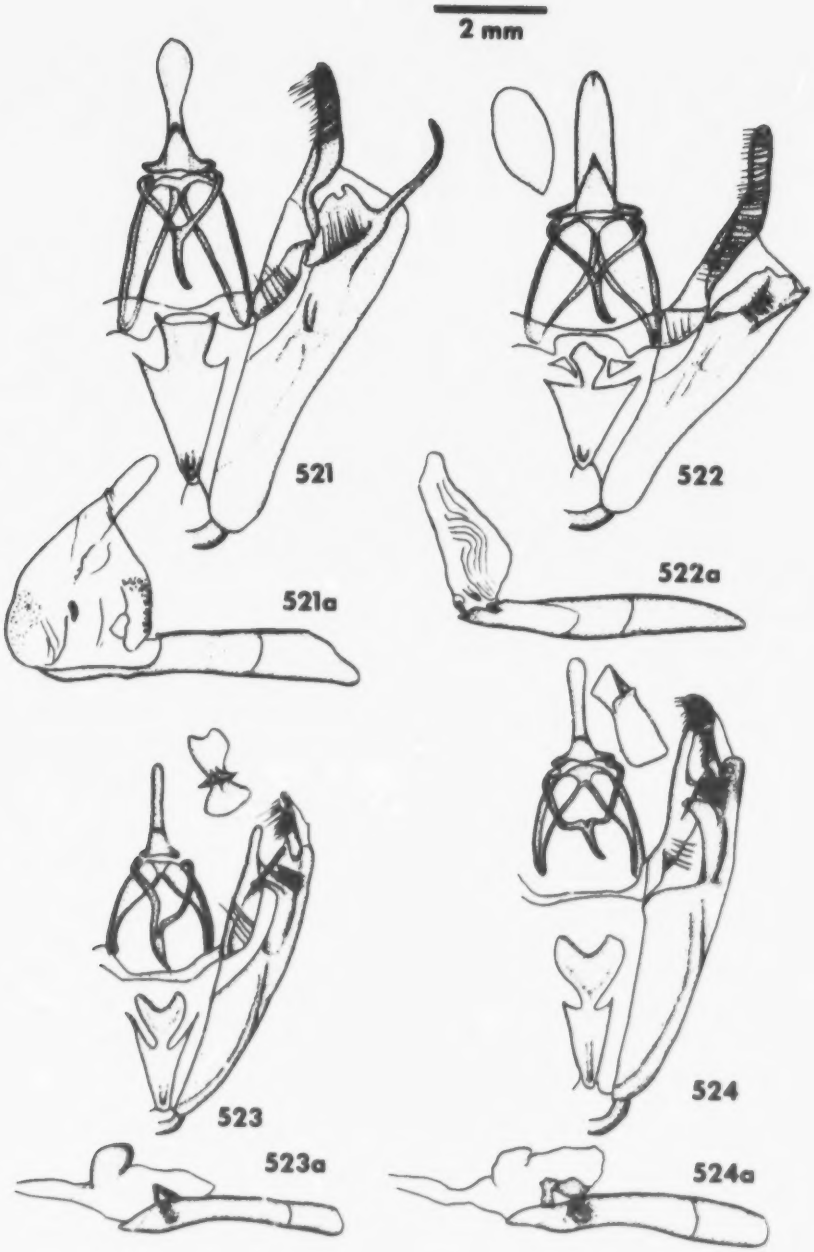

Figures 521-524.--Pero male genitalia: 521, pinsa, R. Cristal Mayu, Chapare, Bolivia, and 521a, aedeagus; 522, boa, R. Cristal Mayu, Chapare, Bolivia, and 522a, aedeagus; 523, juna, Yungas de la Paz, La Paz, Bolivia, and 523a, aedeagus; 524, pulverosa, "Rio," Brazil, and 524a, aedeagus.

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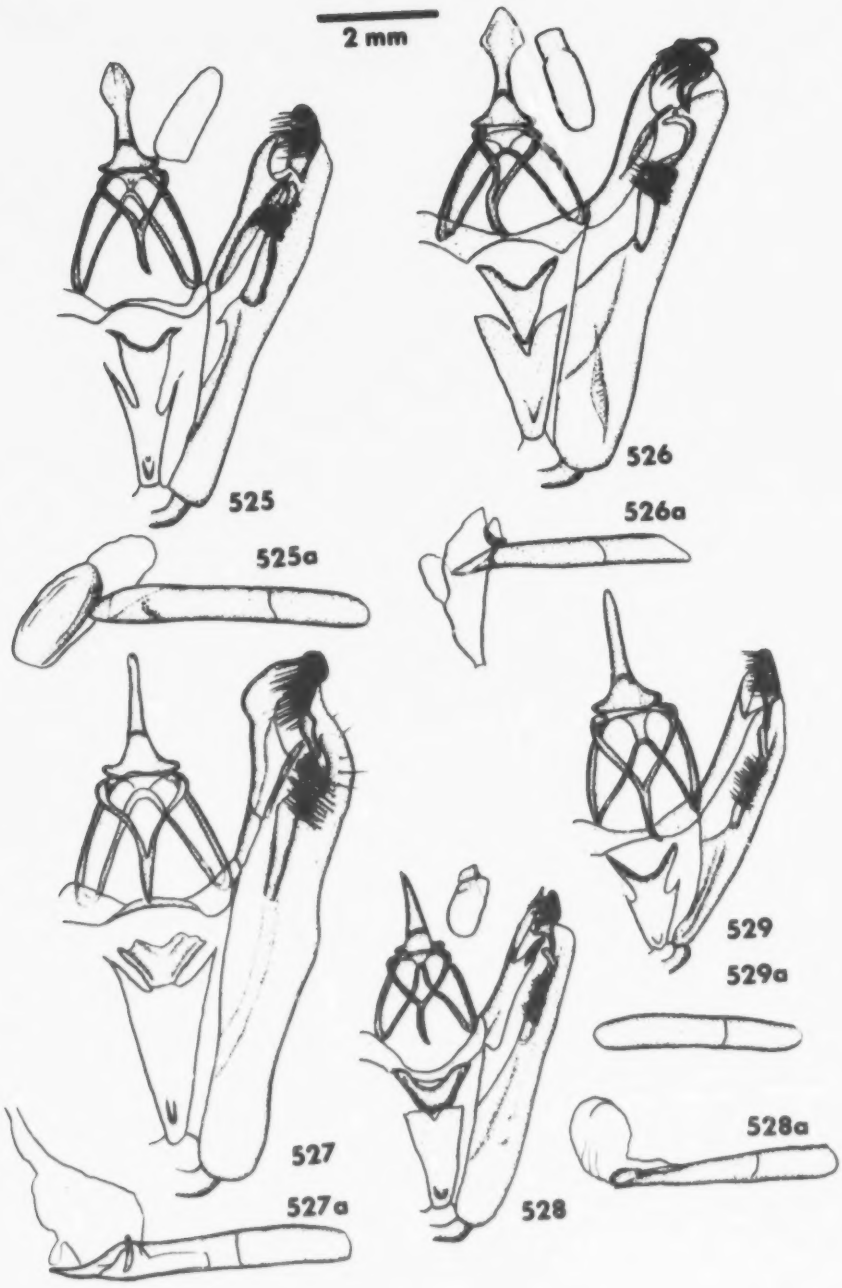

Figures 525-529.--Pero male genitalia: 525, rapinaria, "St. Catherines," Brazil, and 525a, aedeagus; 526, rapta, Chanchamayo, Junin, Peru, and 526a, aedeagus; 527, cetana, Alto da Serra, São Paulo, Brazil, and 527a, aedeagus; 528, hoffmanni, Campo Bello, Rio de Janeiro, Brazil, and 528a, aedeagus; 529, ligera, Castro, Paraná, Brazil, and 529a, aedeagus.

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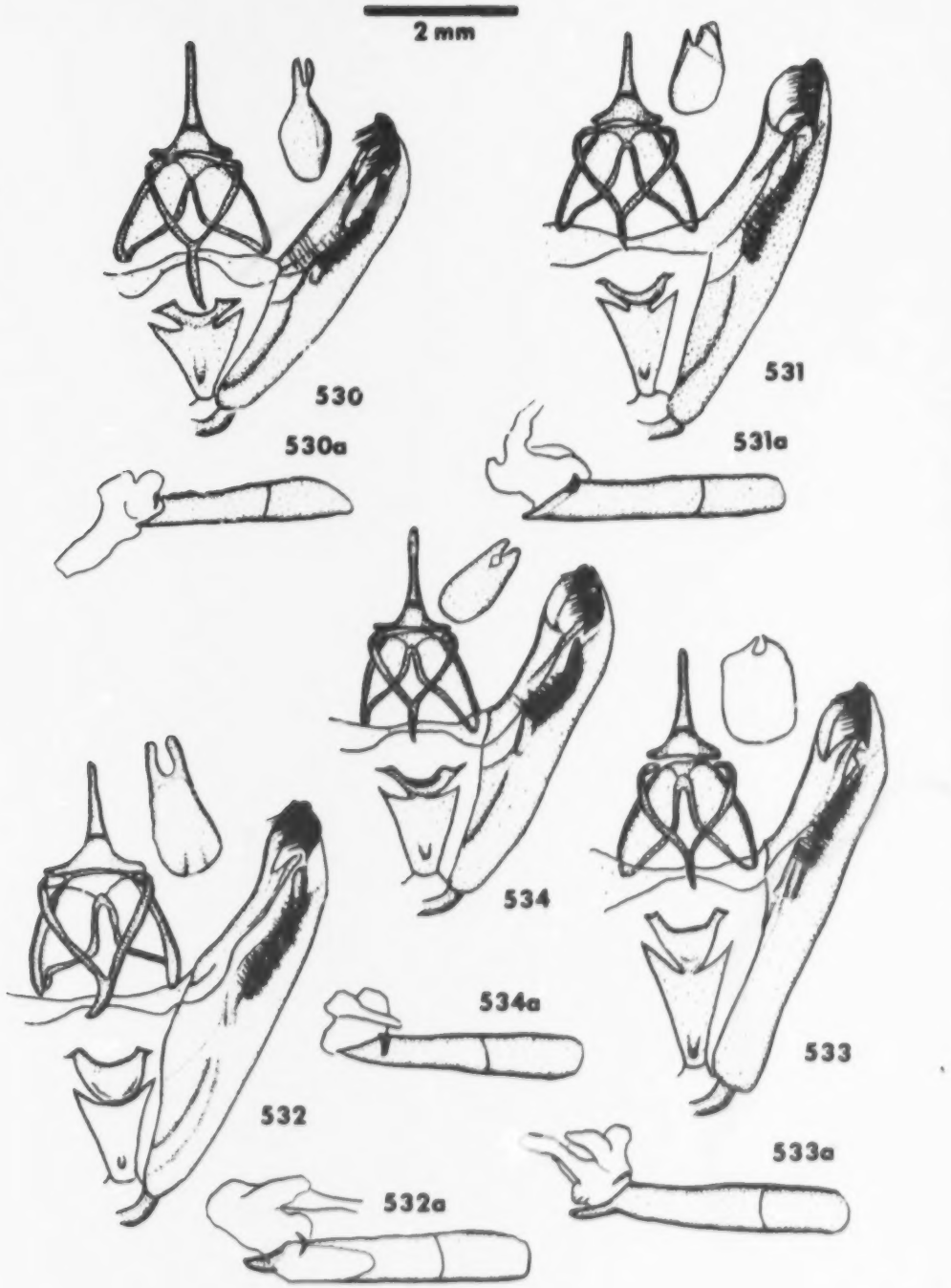

Figures 530-534.--Pero male genitalia: 530, lasiocampodes, Huancabamba, Pasco, Peru, and 530a, aedeagus; 531, castanea, Huancabamba, Pasco, Peru, and 531a, aedeagus; 532, albiorbis, Huancabamba, Pasco, Peru, and 532a, aedeagus; 533, lisima, "bolivia," and 533a, aedeagus; 534, aeniasaria, Castro, Paraná, Brazil, and 534a, aedeagus.

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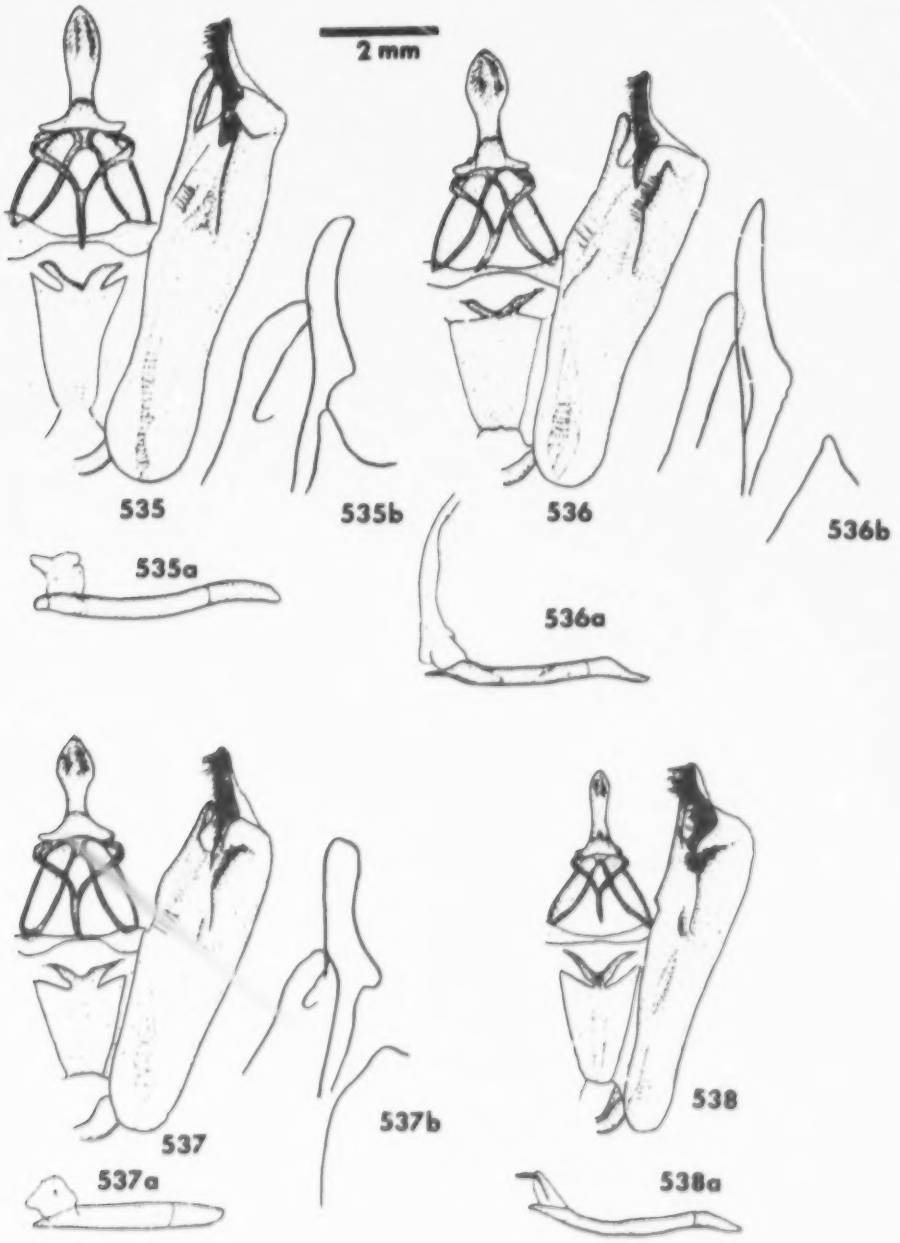

Figures 535-538.—Pero male genitalia: 535, externa, Tabatinga, Amazonas, Brazil, and 535a, aedeagus, and 535b, tip of valve; 536, clysiaria, St. Laurent, Maroni, French Guiana, and 536a, aedeagus, and 536b, detail of tip of right valve; 537, loca, "Bolivia," and 537a, aedeagus, and 537b, detail of tip of right valve; 538, circumflexata, Puerto Elegio, Oaxaca, Mexico, and 538a, aedeagus.

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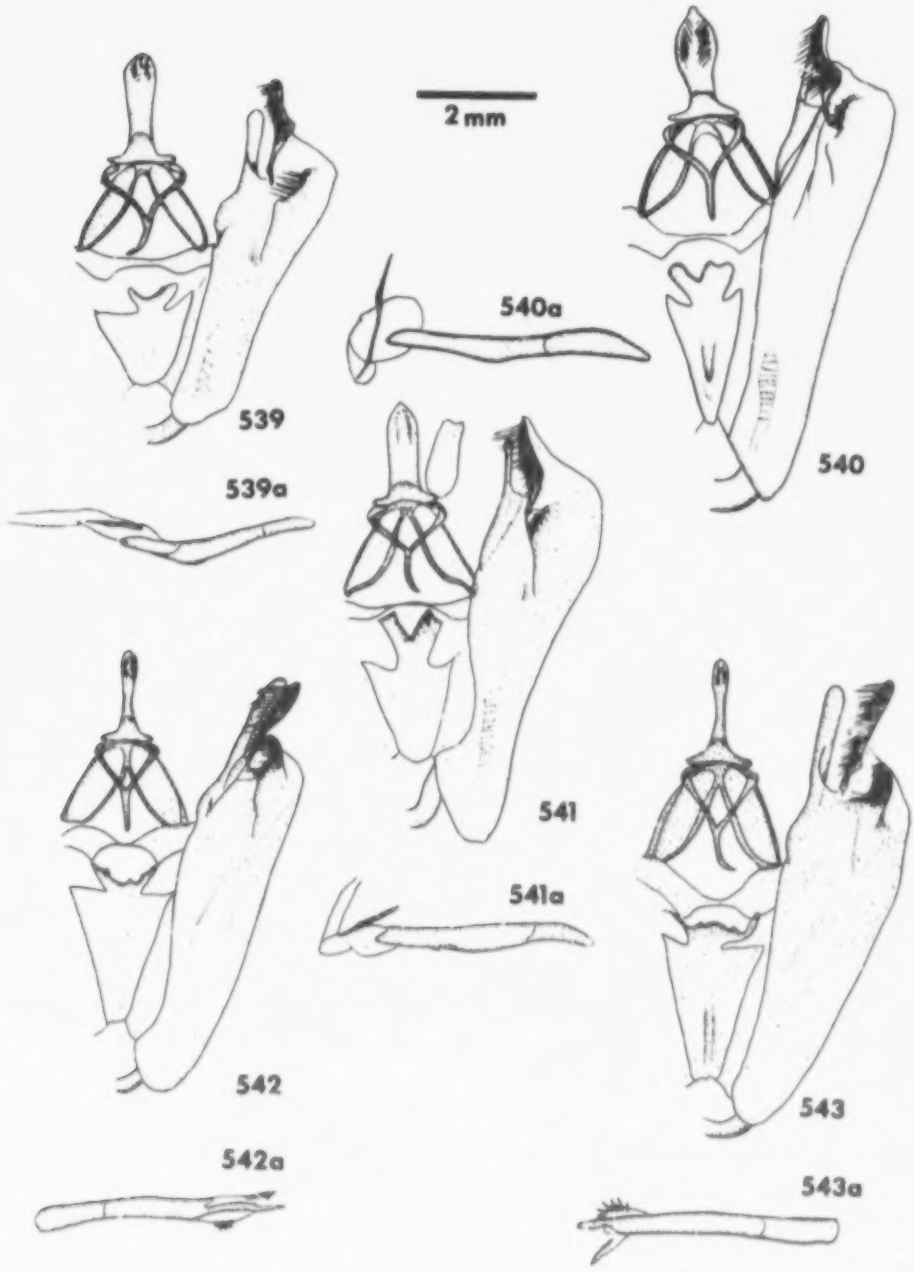

Figures 539-543.--Pero male genitalia: 539, similis, Monteverde, Puntarenas, Costa Rica, and 539a, aedeagus; 540, juruana, Moengo, Boven, Cottica R., Surinam, and 540a, aedeagus; 541, dorsipunctata, Barro Colorado Island, Panama, and 541a, aedeagus; 542, fragila, Pto. Greether, Ichilo, Santa Cruz, Bolivia, and 542a, aedeagus; 543, incisa, Pumayacu, Peru, and 543a, aedeagus.

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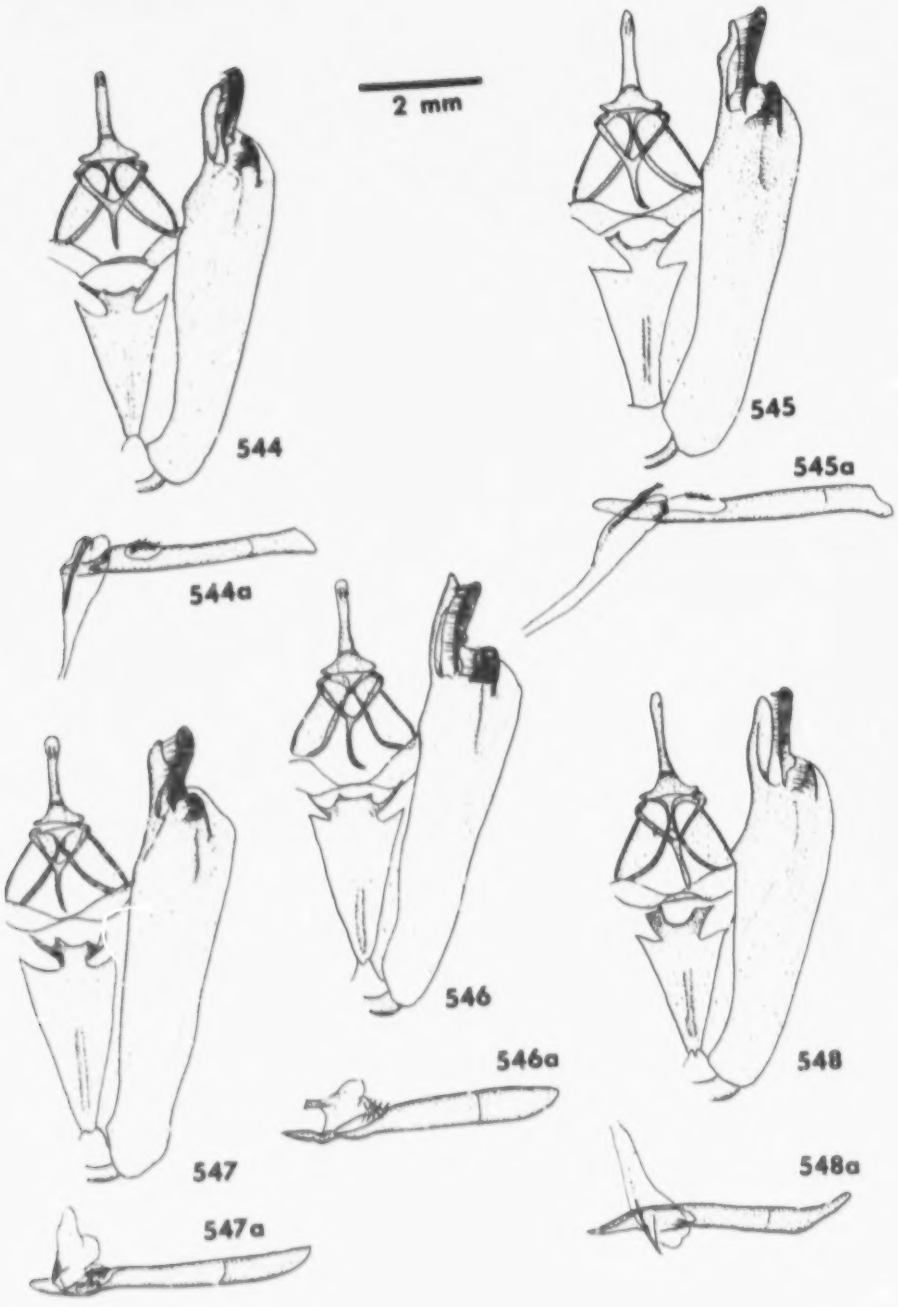

Figures 544-548.--Pero male genitalia: 544, registrada, Barro Colorado Island, Panama, and 544a, aedeagus; 545, guruparia, Manicore, Rio Madeira, Amazonas, Brazil, and 545a, aedeagus; 546, rumina, "Bolivia," and 546a, aedeagus; 547, maca, Macas, Santiago-Zamora, Ecuador, and 547a, aedeagus; 548, infantilis, St. Laurent, Maroni, French Guiana, and 548a, aedeagus.

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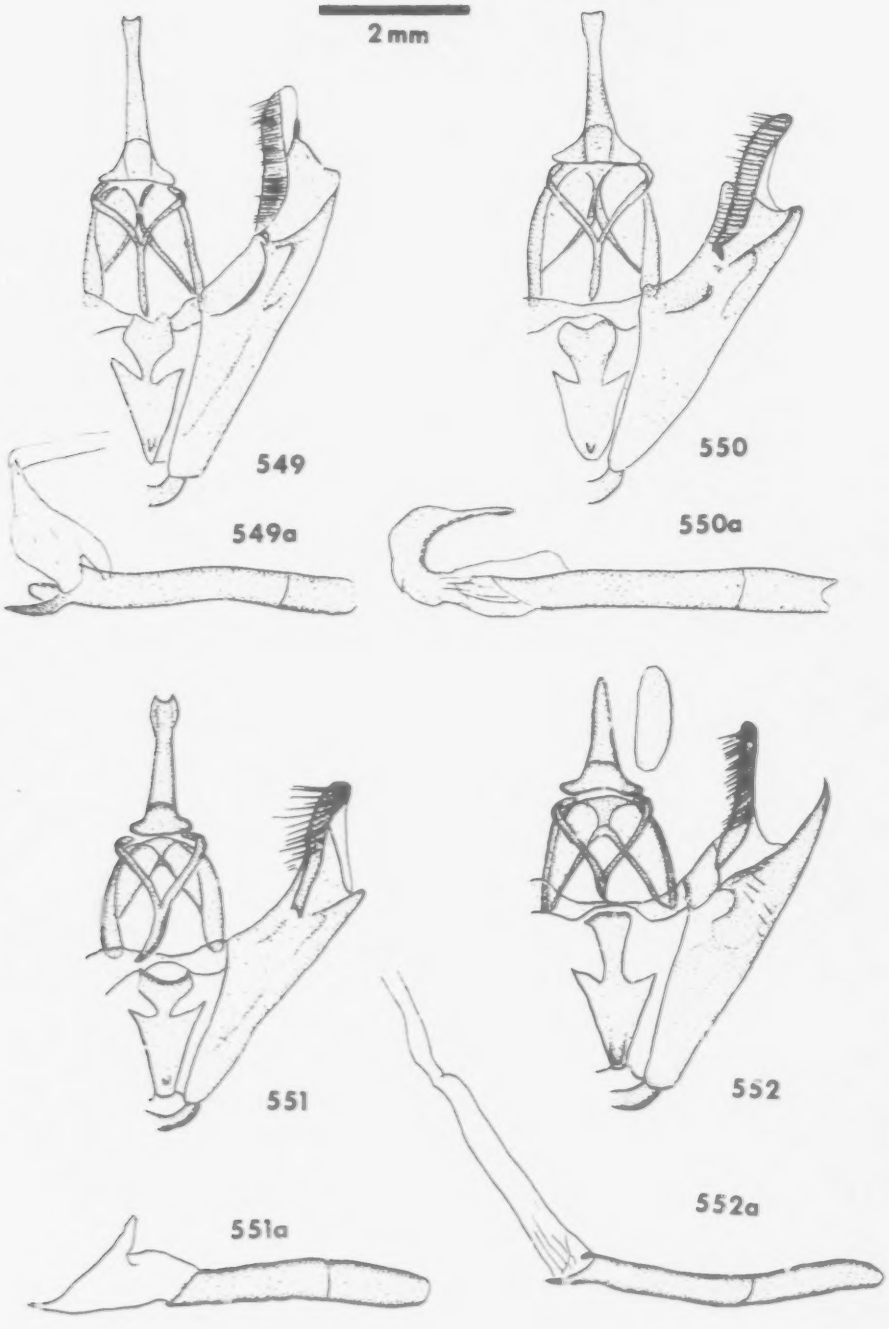

Figures 549-552.--Pero male genitalia: 549, steinbachi, Corumba, Matto Grosso, Brazil, and 549a, aedeagus; 550, bicurvata, Jujuy, Argentina, and 550a, aedeagus; 551, palmirensis, Palmira, Argentina, and 551a, aedeagus; 552, binasta, Rockstone, Guyana, and 552a, aedeagus.

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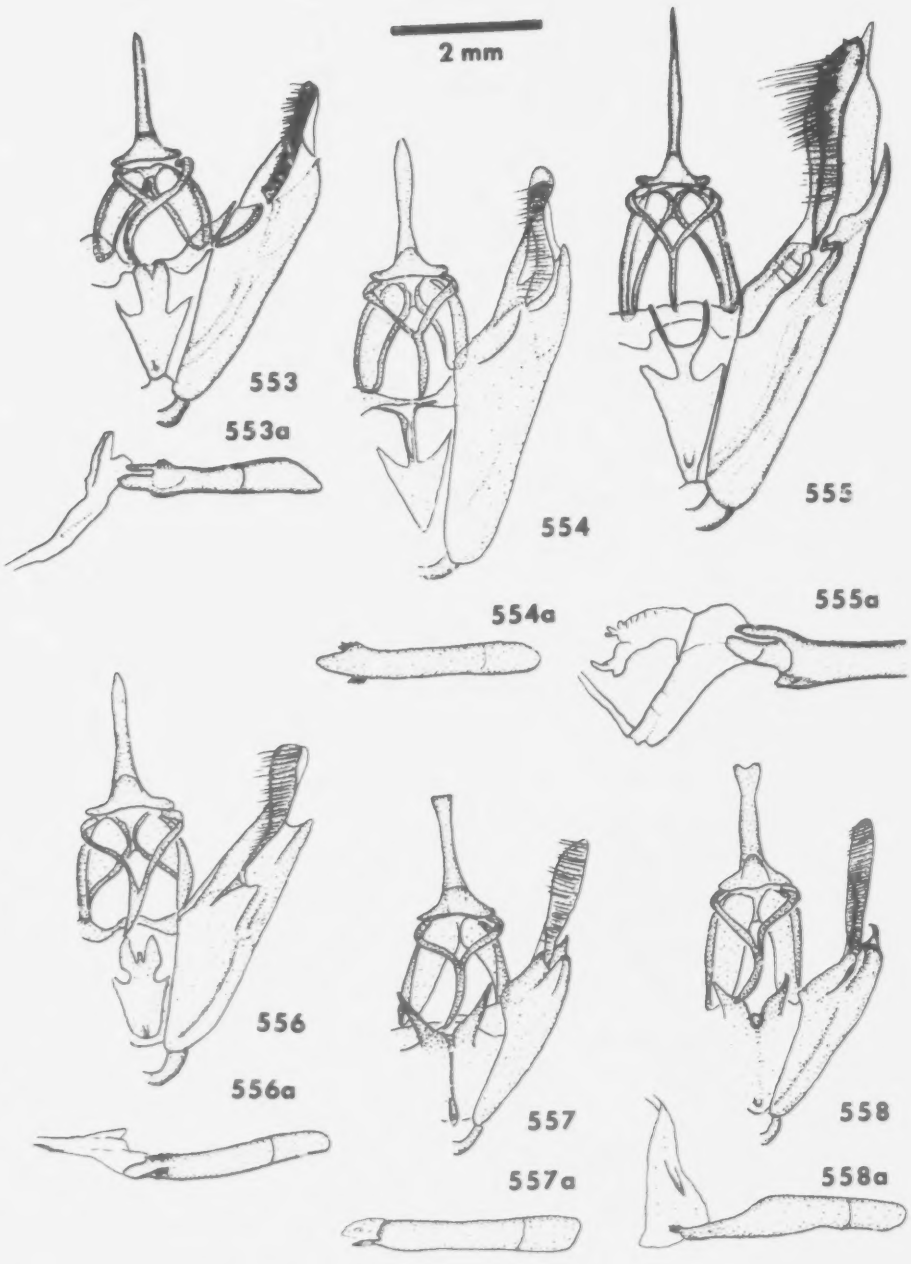

Figures 553-558.--Pero male genitalia: 553, nerisaria, Santiago, Cuba, and 553a, aedeagus; 554, rectisectaria, Guajataca Forest, Isabela, Puerto Rico, and 554a, aedeagus; 555, sella, La Viste, Haiti, and 555a, aedeagus; 556, lastima, Key Largo, Florida, and 556a, aedeagus; 557, amnicincta, Neuquen, Argentina, and 557a, aedeagus; 558, norma, La Paz, Entre Ríos, Argentina, and 558a, aedeagus.

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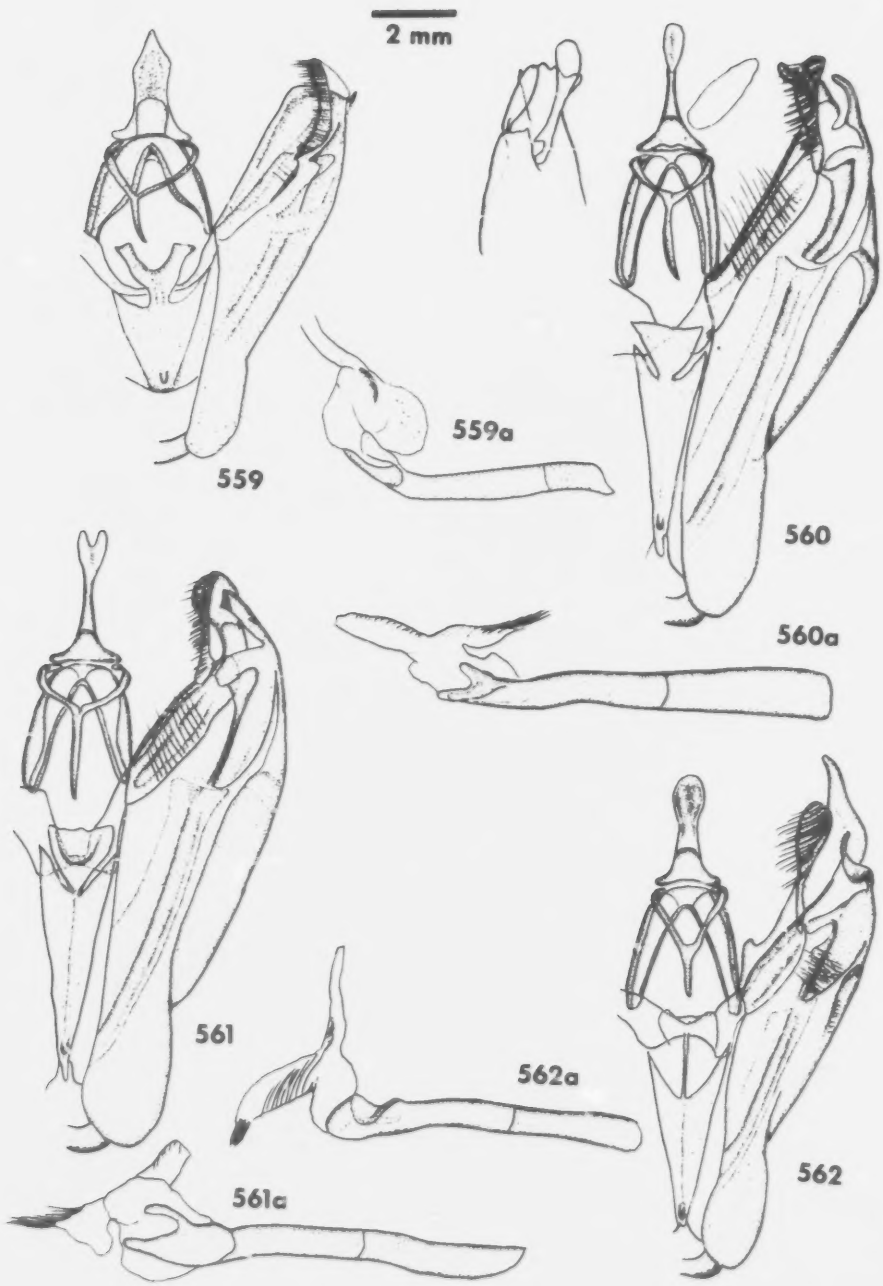

Figures 559-562.--Pero male genitalia: 559, constrictifascia, Yahuarmayo, Puno, Peru, and 559a, aedeagus; 560, solitaria, Medina, Boyacá, Colombia, and 560a, aedeagus; 561, gapa, Chanchamayo, Junin, Peru, and 561a, aedeagus; 562, albivena, Barro Colorado Island, Panama, and 562a, aedeagus.

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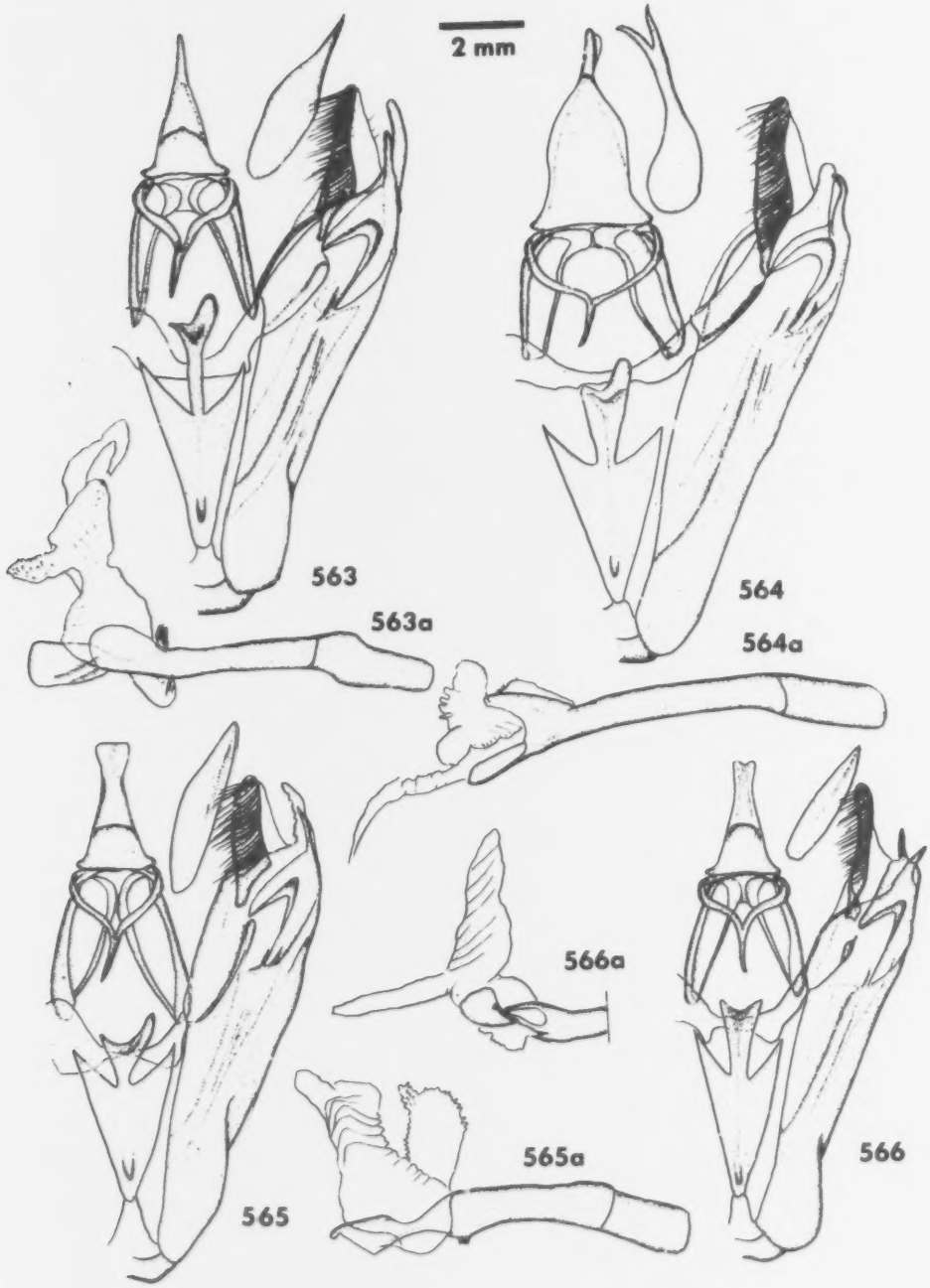

Figures 563-566.--Pero male genitalia: 563, stolidata, Tingo Maria, Huánuco, Peru, and 563a, aedeagus; 564, diana, Tingo Maria, Huánuco, Peru, and 564a, aedeagus; 565, bulba, Juan Vinas, Cartago, Costa Rica, and 565a, aedeagus; 566, muza, Rancho Grande, Aragua, Venezuela, and 566a, aedeagus.

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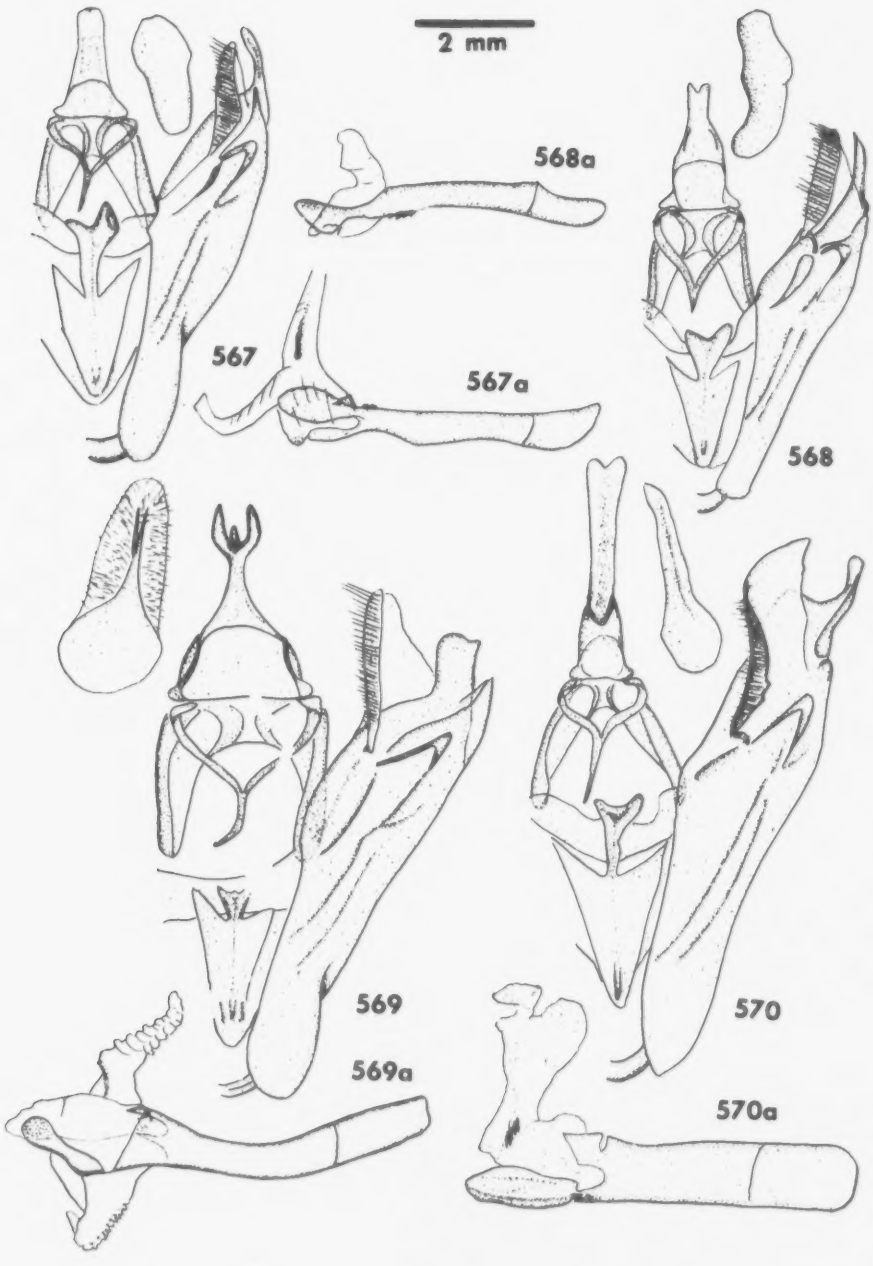

Figures 567-570.--Pero male genitalia: 567, fusaria, Pelotas, Rio Grande do Sul, Brazil, and 567a, aedeagus; 568, vera, Zacualpan, Mexico, and 568a, aedeagus; 569, tridenta, São Paulo, Brazil, and 569a, aedeagus; 570, monstrosa, Rio Huacamayo, Puno, Peru, and 570a, aedeagus.

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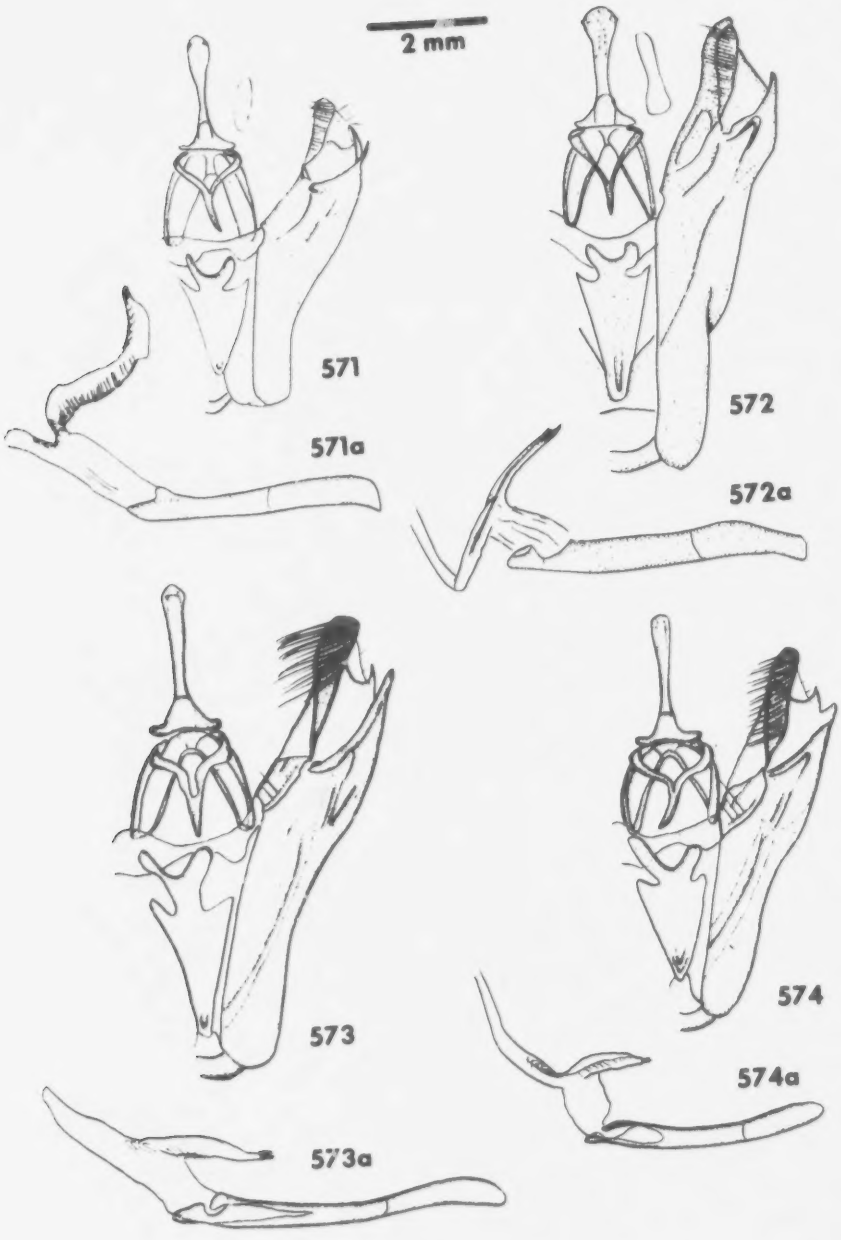

Figures 571-574.--Pero male genitalia: 571, spitzi, "St. Catherines," Brazil, and 571a, aedeagus; 572, contrasta, St. Jean, Maroni, French Guiana, and 572a, aedeagus; 573, collenettei, Sierra de la Ramada, Tucumán, Argentina, and 573a, aedeagus; 574, pernamba, Sierra de Bernada, Pernambuco, Brazil, and 574a, aedeagus.

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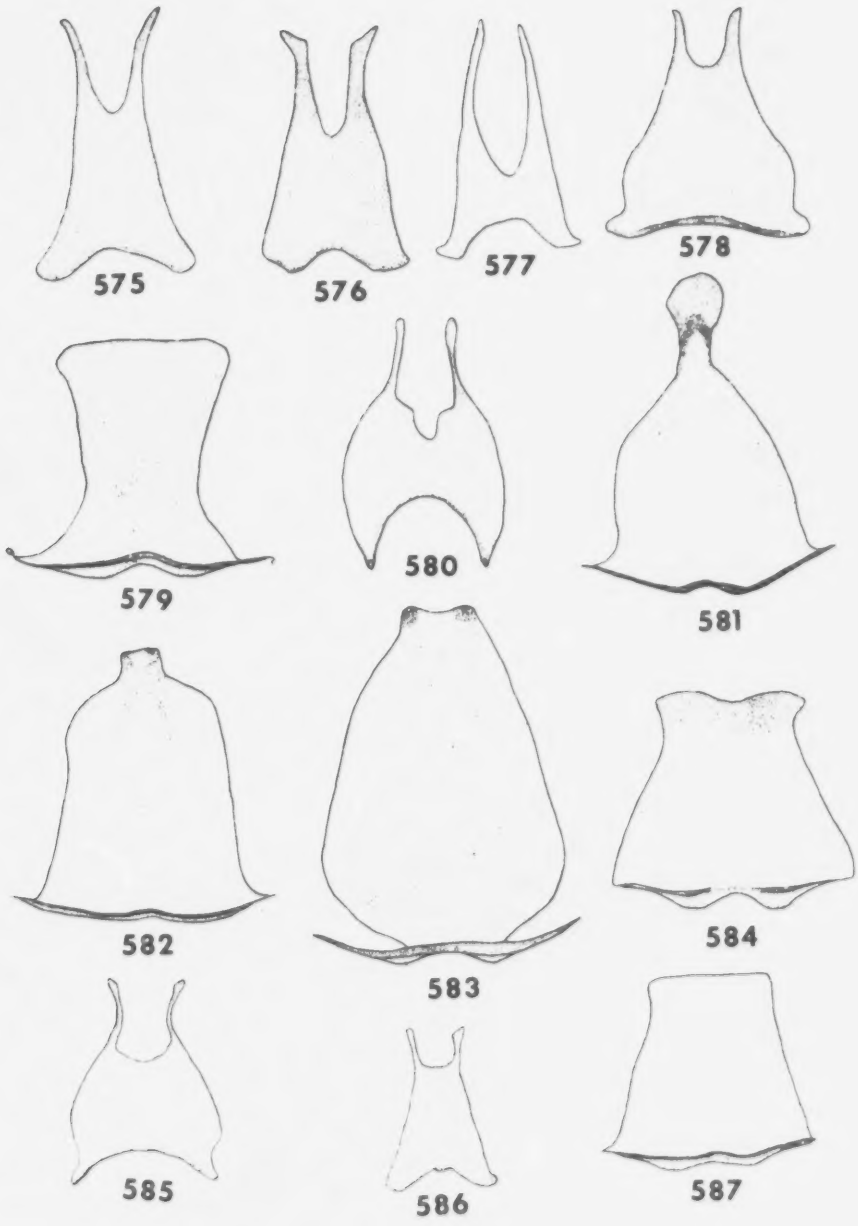

Figures 575-587.--Pero male genitalia: 575, nerisaria, Santiago, Cuba, eighth sternite; 576, rectisectaria, Guajataca Forest, Puerto Rico, eighth sternite; 577, sella, La Viste, Haiti, eighth sternite; 578, lastima, Key Largo, Florida, eighth sternite; 579, stolidata, Tingo Maria, Huánuco, Peru, eighth tergite, and 580, eighth sternite; 581, bulba, Juan Vinas, Cartago, Costa Rica, eighth tergite; 582, muza, "Colombia," eighth tergite; 583, tridenta, São Paulo, Brazil, eighth tergite; 584, contrasta, St. Jean, Maroni, French Guiana, eighth tergite, and 585, eighth sternite; 586, spitzi, "St. Catherines," Brazil, eighth sternite, and 587, eighth tergite.

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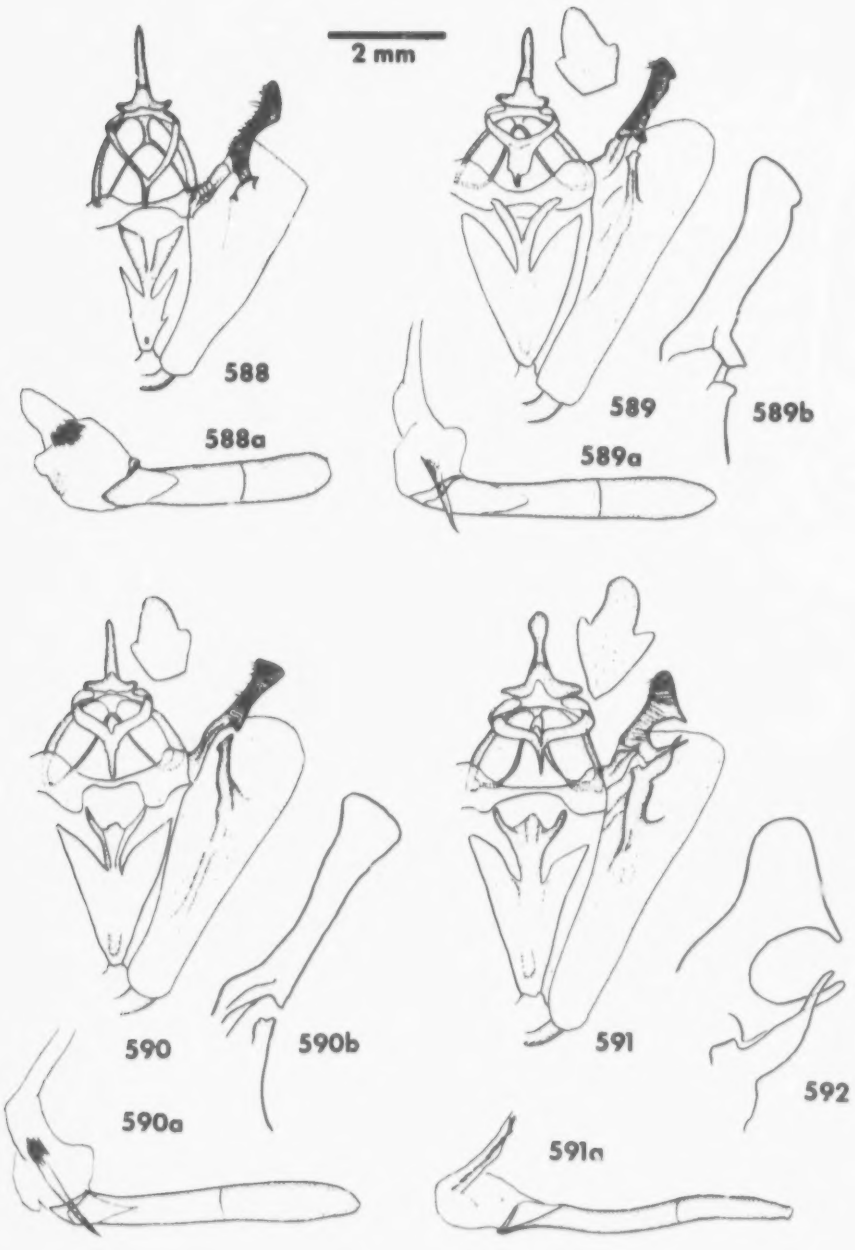

Figures 588-592.--Pero male genitalia: 588, plagodiata, Suapure, Caura River, Bolívar, Venezuela, and 588a, aedeagus; 589, otra, La Union, Puno, Peru, and 589a, aedeagus, and 589b, costal fold of right valve; 590, polygonaria, R. Cristal Mayu, Chapare, Bolivia, and 590a, aedeagus, and 590b, costal fold of right valve; 591, arciogona, Castro, Paraná, Brazil, and 591a, aedeagus, and 592, costal fold of right valve.

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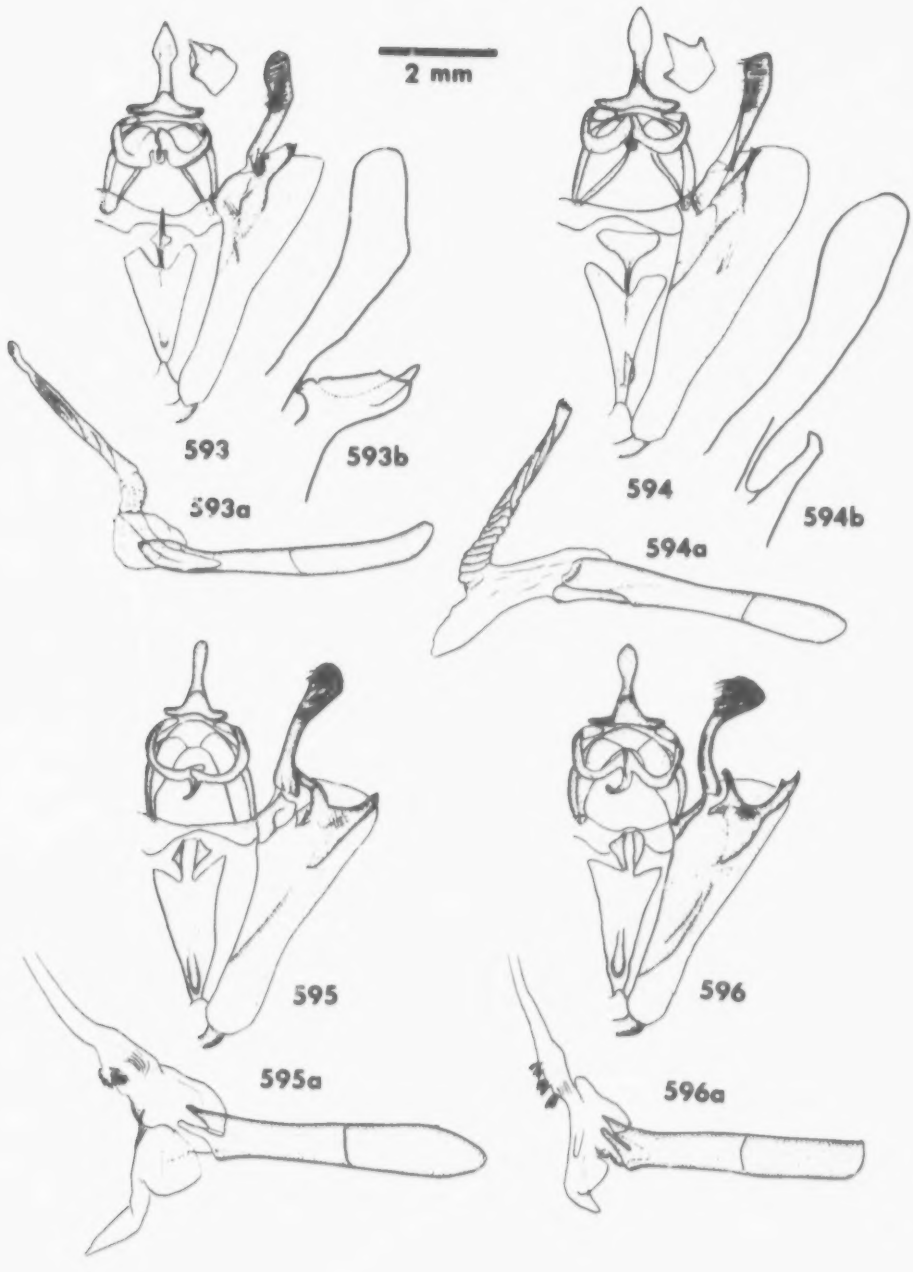

Figures 593-596.--Pero male genitalia: 593, amanda, Vicosa, Minas Gerais, Brazil, and 593a, aedeagus, and 593b, costal fold and ventral process of right valve; 594, pumaria, Yahuarmayo, Puno, Peru, and 594a, aedeagus, and 594b, costal fold and ventral process of right valve; 595, pallidior, Pto. Greether, Ichilo, Santa Cruz, Bolivia, and 595a, aedeagus; 596, naranja, Pozuzo, Huánuco, Peru, and 596a, aedeagus.

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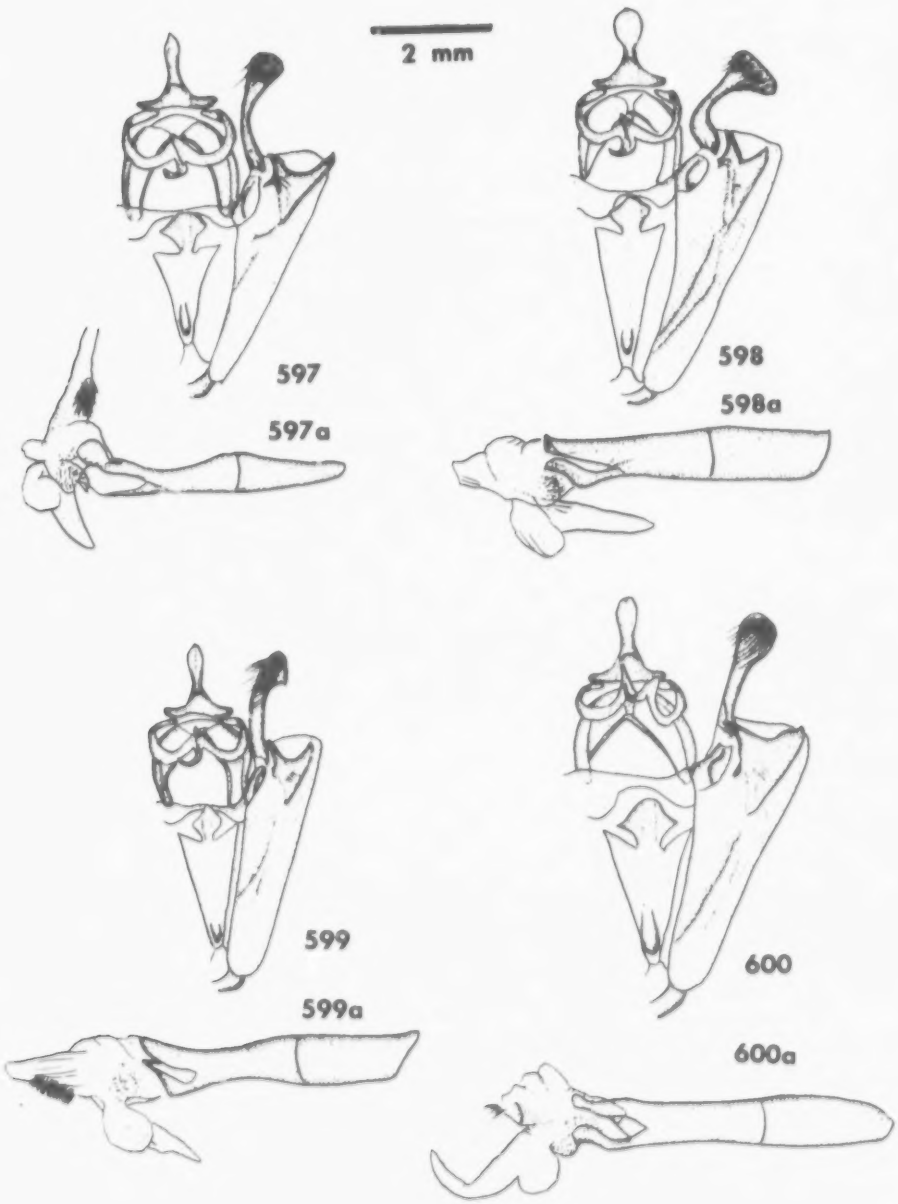

Figures 597-600.--Pero male genitalia: 597, suffusa, Loja, Ecuador, and 597a, aedeagus; 598, clana, Farroupilha, Rio Grande do Sul, Brazil, and 598a, aedeagus, and 599, Mérida, Venezuela, and 599a, aedeagus; 600, speciosata, Huancabamba, Pasco, Peru, and 600a, aedeagus.

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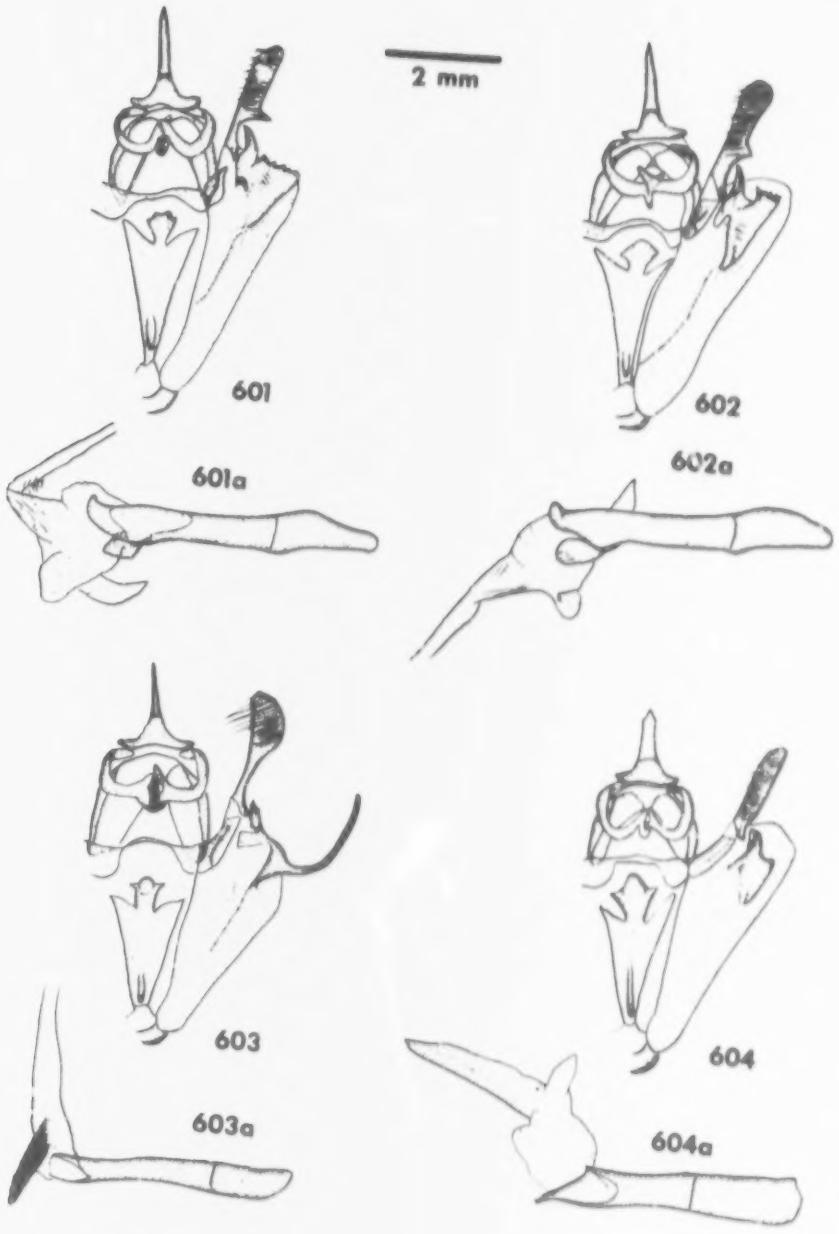

Figures 601-604.--Pero male genitalia: 601, costa, Mount Poas, Costa Rica, and 601a, aedeagus; 602, cruza, Orizaba, Veracruz, Mexico, and 602a, aedeagus; 603, decora, Castro, Paraná, Brazil, and 603a, aedeagus; 604, delauta, Oxapampa, Pasco, Peru, and 604a, aedeagus.

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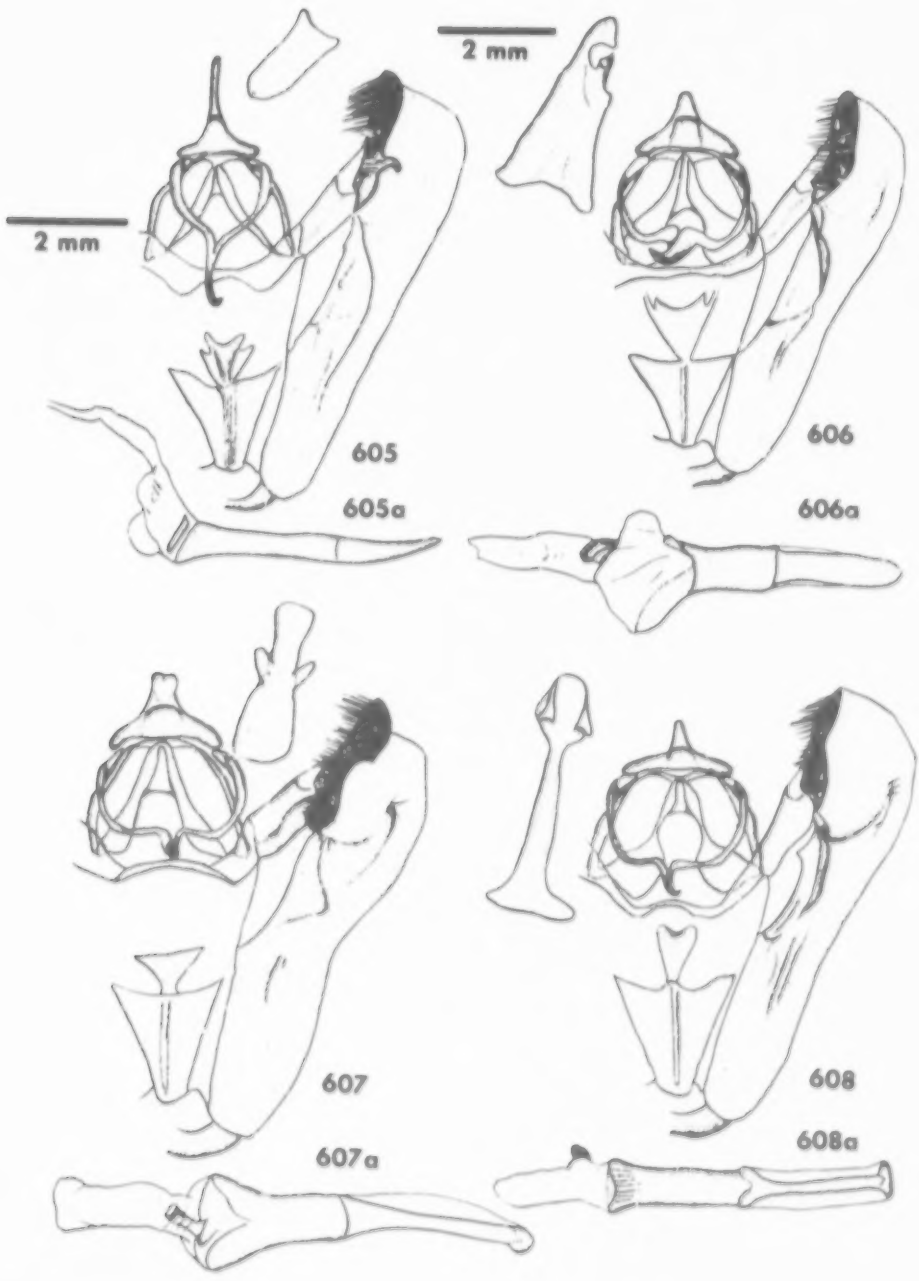

Figures 605-608.--Pero male genitalia: 605, melissa, Jalapa, Veracruz, Mexico, and 605a, aedeagus; 606, rica, Pinar Bonito, Constanza, Dominican Republic, and 606a, aedeagus; 607, bicolor, Jamaica, and 607a, aedeagus; 608, vecina, Jalapa, Veracruz, Mexico, and 608a, aedeagus.

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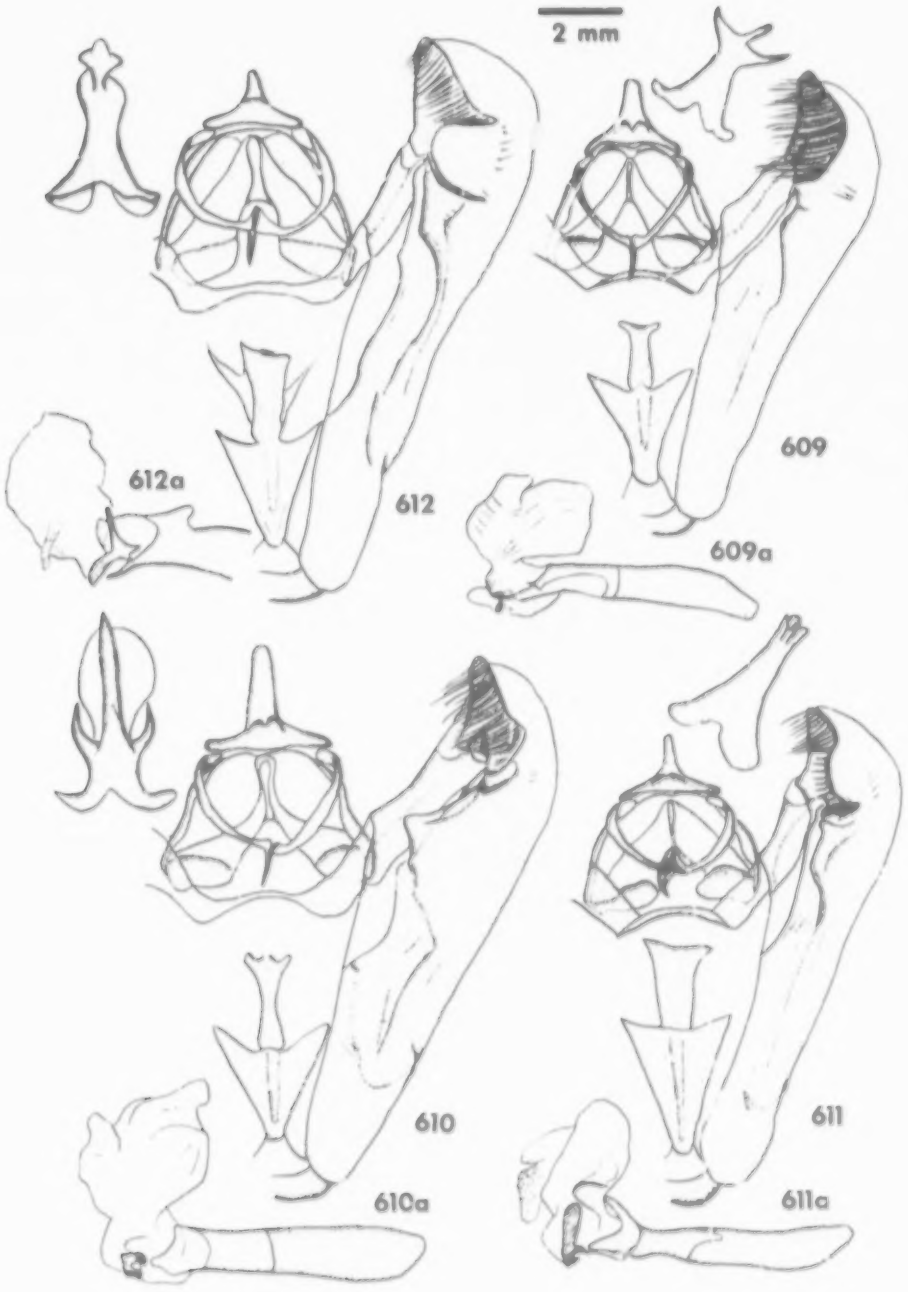

Figures 609-612.--Pero male genitalia: 609, curuma, Jalapa, Veracruz, Mexico, and 609a, aedeagus; 610, idola, Chiriqui, Panama, and 610a, aedeagus; 611, leasema, Orizaba, Veracruz, Mexico, and 611a, aedeagus; 612, iraza, Irazu, Costa Rica, and 612a, aedeagus.

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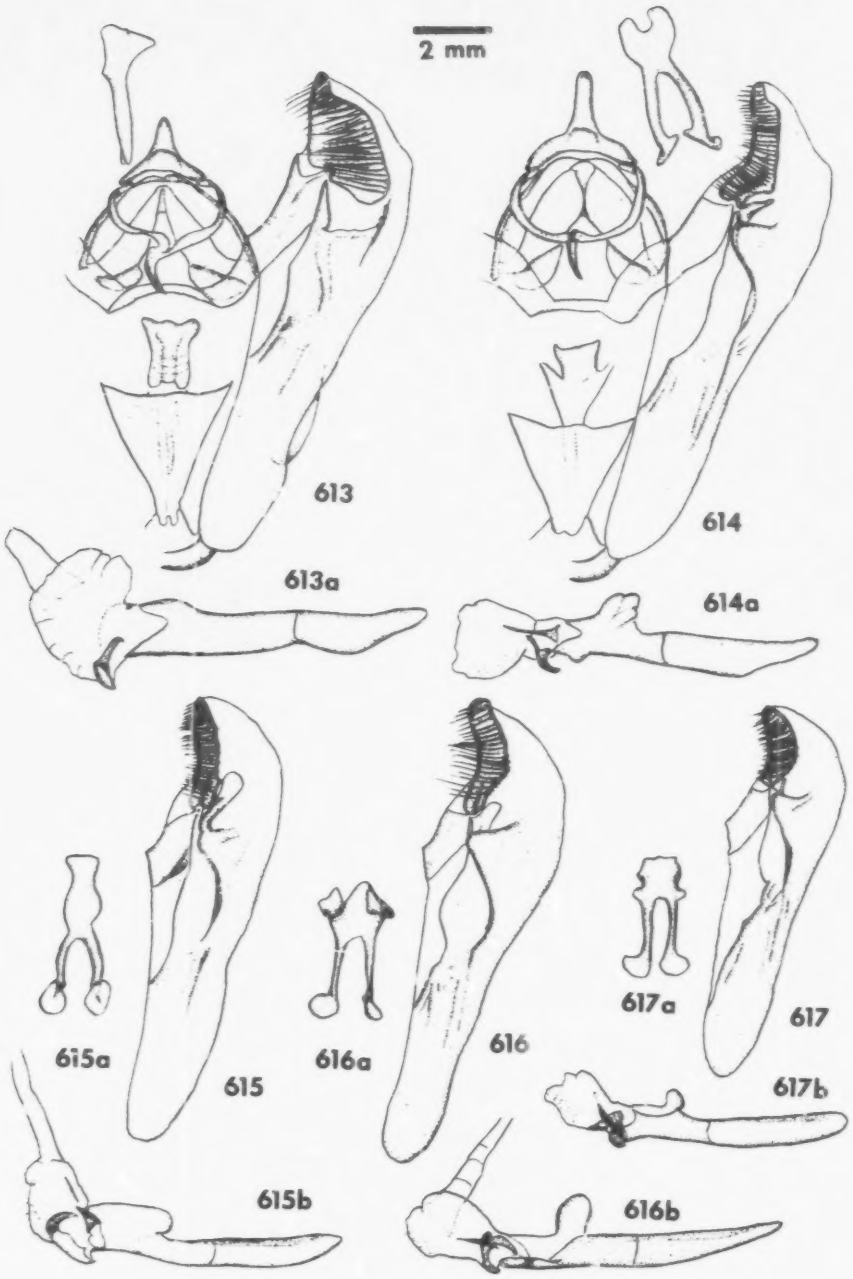

Figures 613-617.--Pero male genitalia: 613, saturata, Uruhuasi, Peru, and 613a, aedeagus; 614, electra, "Peru," and 614a, aedeagus; 615, nucleata, Incachaca, Cochabamba, Bolivia, and 615a, subscaphium, and 615b, aedeagus; 616, rotundata, Juan Vinas, Cartago, Costa Rica, and 616a, subscaphium, and 616b, aedeagus; 617, aragua, Rancho Grande, Aragua, Venezuela, and 617a, subscaphium, and 617b, aedeagus.

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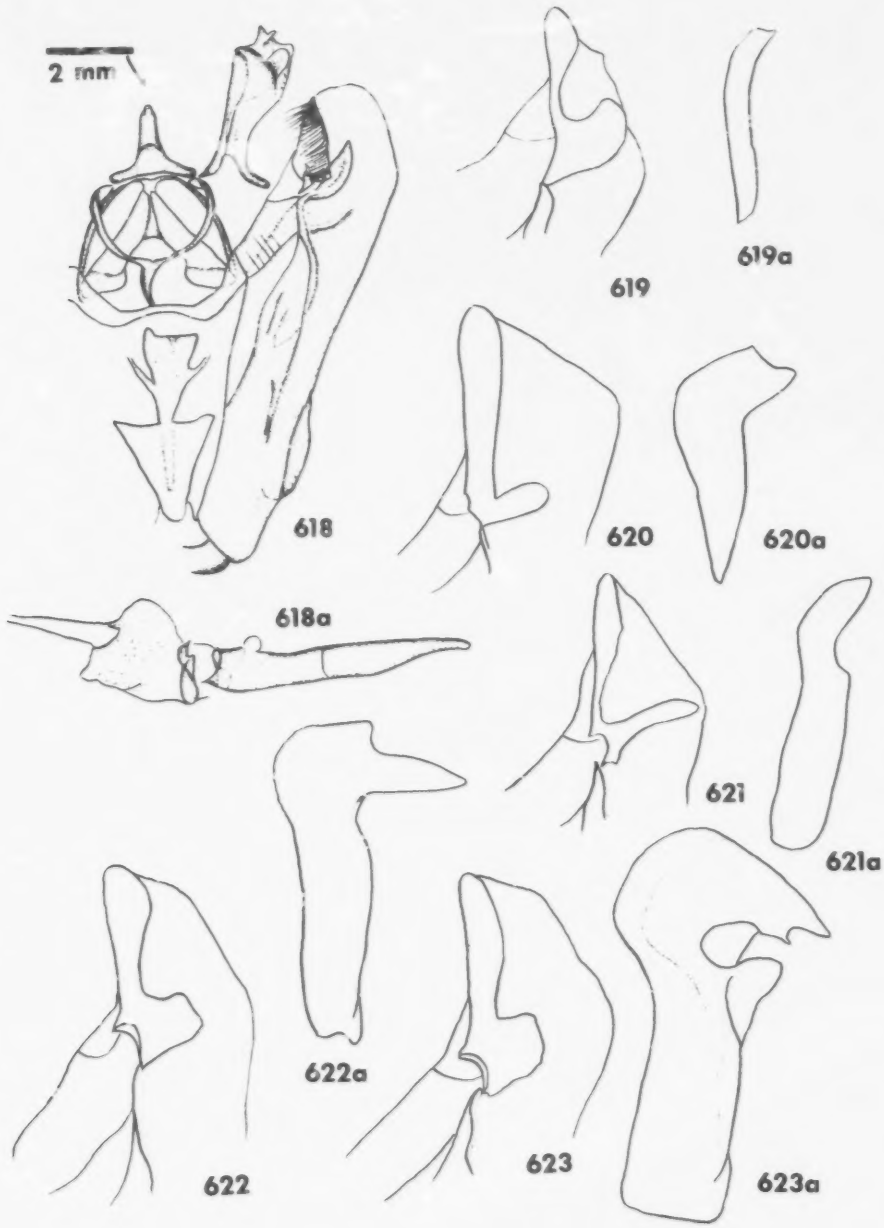

Figures 618-623.--Pero male genitalia: 618, contenela, "Guatemala," and 618a, aedeagus; 619, honestaria, Atlanta, Georgia, tip of right valve, and 619a, subscaphium; 620, hubneraria, Atlanta, Georgia, tip of right valve, and 620a, subscaphium; 621, morrisonaria, no data, tip of right valve, and 621a, subscaphium; 622, gigantea, West Fork of Oak Creek Canyon, Arizona, tip of right valve, and 622a, subscaphium; 623, mizon, Lake Arrowhead, British Columbia, tip of right valve, and 623a, subscaphium.

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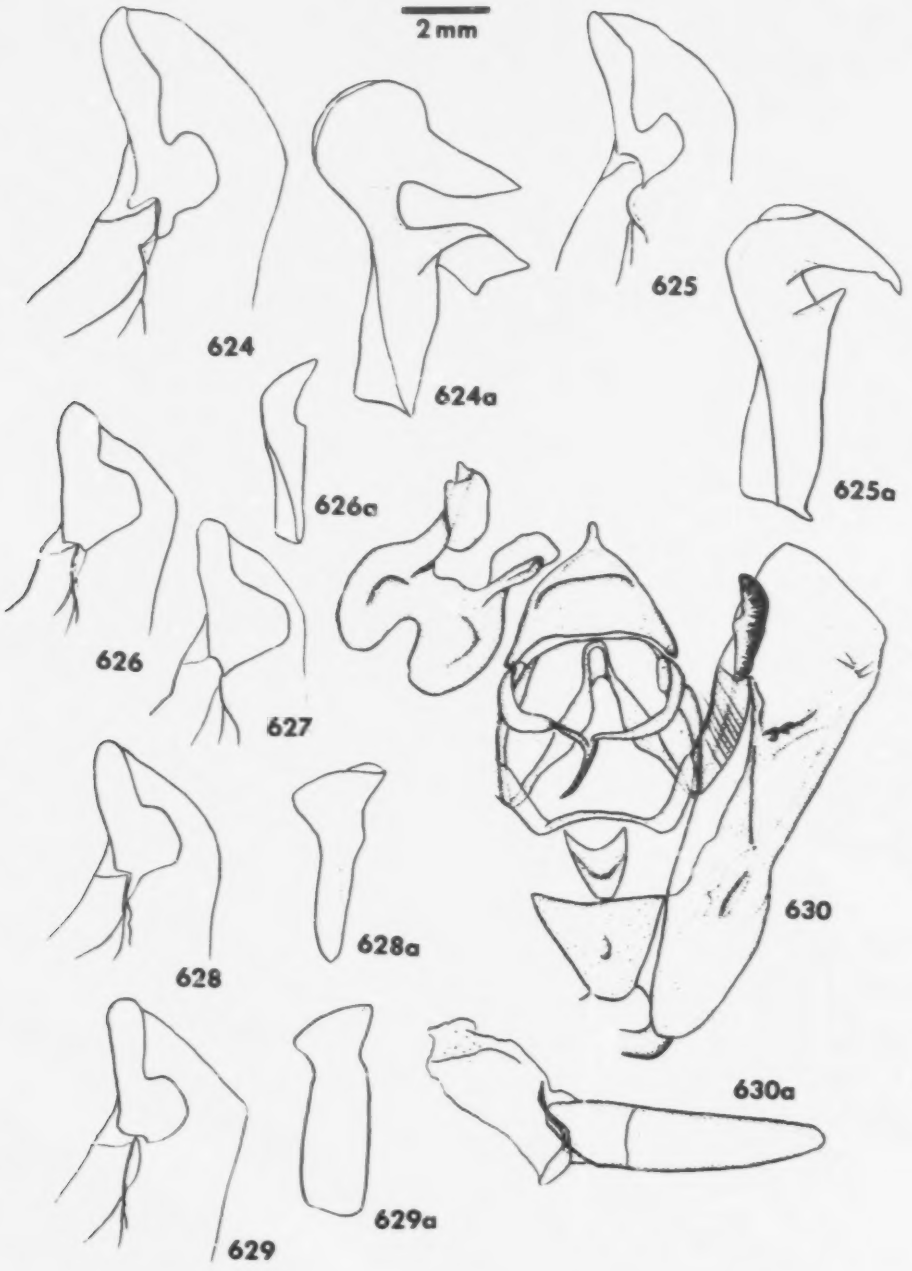

Figures 624-630.--Pero male genitalia: 624, macdunnoughi, San Diego, California, tip of right valve, and 624a, subscaphium; 625, catalina, Santa Catalina Island, California, tip of right valve, and 625a, subscaphium; 626, modesta, Walnut Canyon, Arizona, tip of right valve, and 626a, subscaphium, and 627, Santa Catalina Mts., Arizona, tip of right valve; 628, behrensaria, Monachee Meadows, Tulare Co., California, tip of right valve, and 628a, subscaphium; 629, occidentalis, Hart Prarie, Coconino Co., Arizona, tip of right valve, and 629a, subscaphium; 630, corata, Jalapa, Veracruz, Mexico, and 630a, aedeagus.

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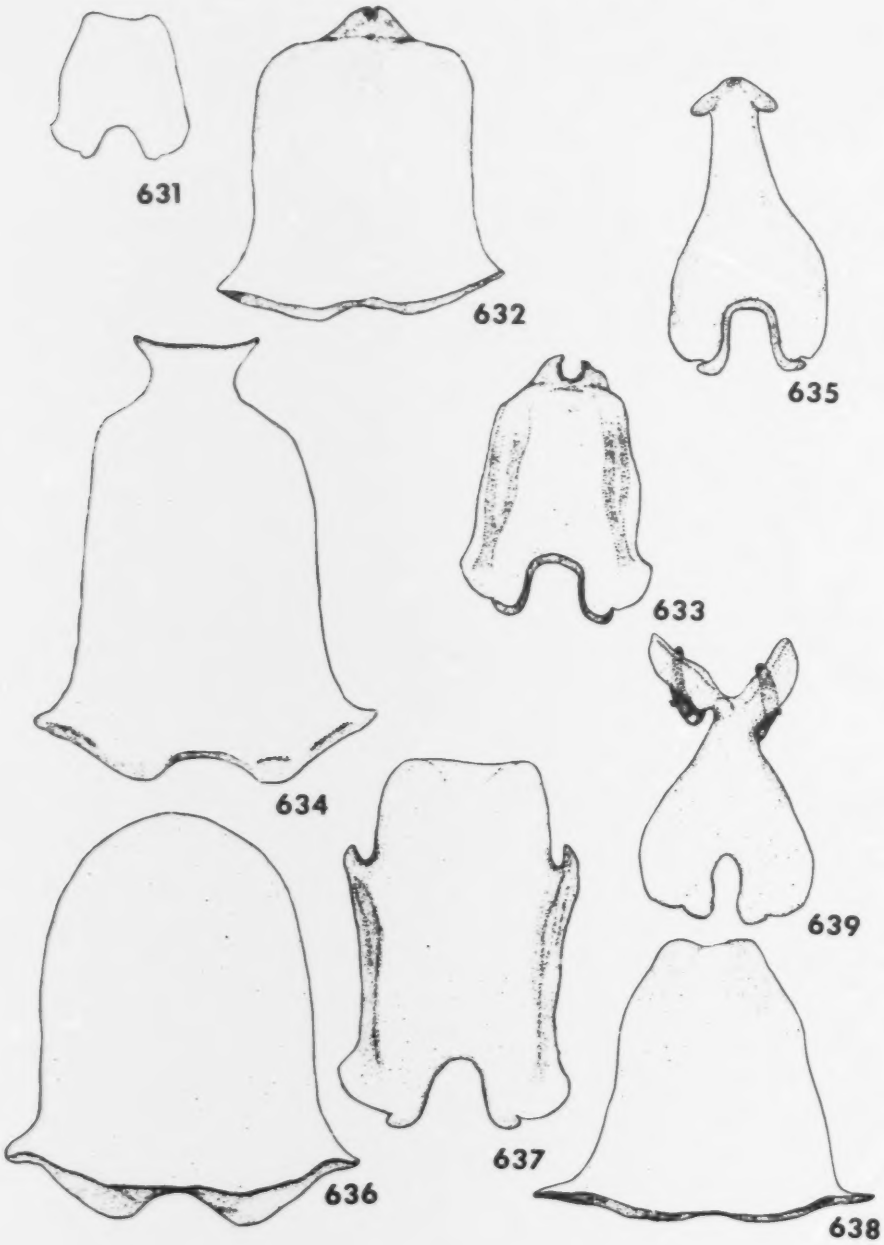

Figures 631-639.--Pero male genitalia: 631, melissa, Mexico City, Mexico, eighth sternite; 632, rica, Pinar Bonito, Constanza, Dominican Republic, eighth tergite, and 633, eighth sternite; 634, bicolor, Jamaica, eighth tergite, and 635, eighth sternite; 636, vecina, Jalapa, Veracruz, Mexico, eighth tergite, and 637, eighth sternite; 638, curuma, Jalapa, Veracruz, Mexico, eighth tergite, and 639, eighth sternite.

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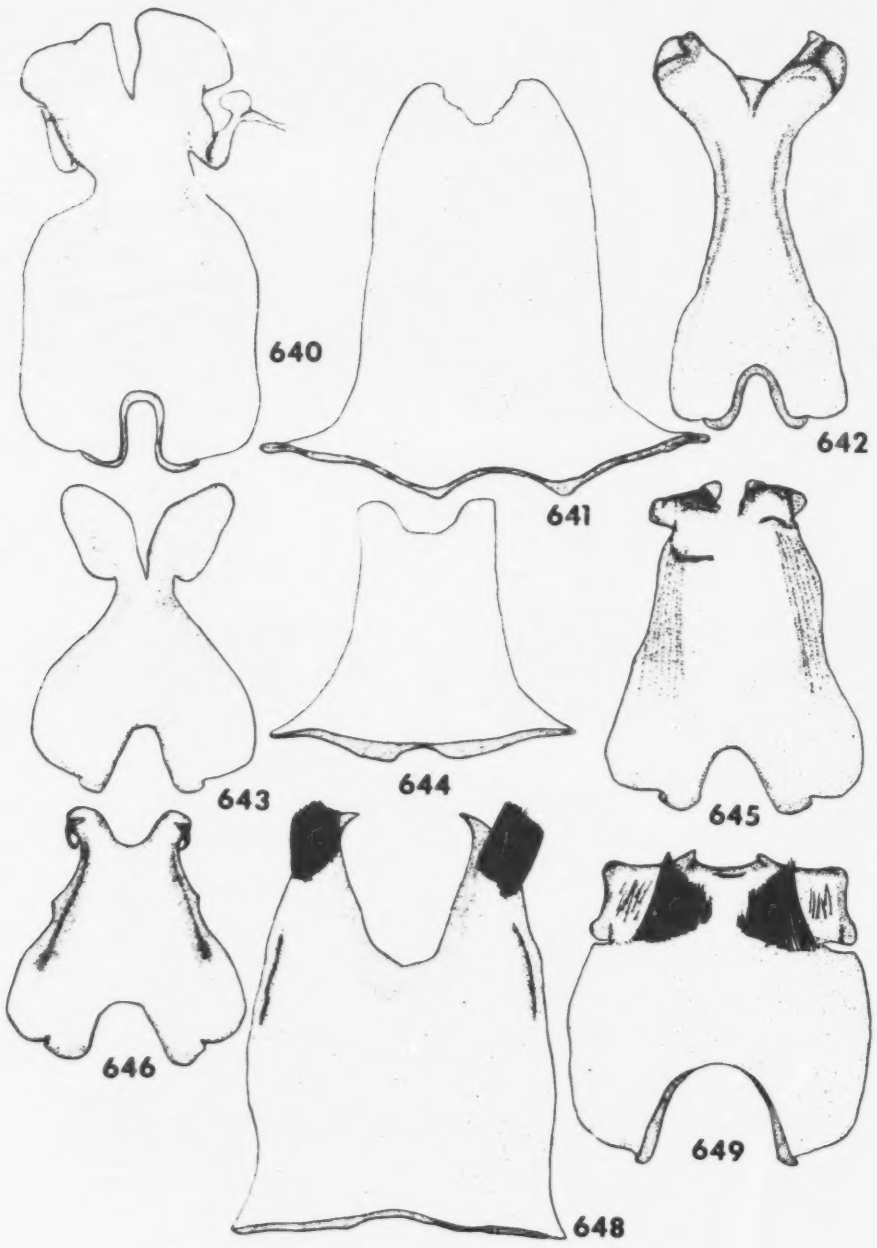

Figures 640-649.—Pero male genitalia: 640, idola, Chiriqui, Panama, eighth sternite, and 641, eighth tergite; 642, lessema, Santa Maria, Quezaltenango, Guatemala, eighth sternite; 643, saturata, Uruhuasi, Peru, eighth sternite, and 644, eighth tergite; 645, electra, "Perou," eighth sternite; 646, rotundata, Juan Vinas, Cartago, Costa Rica, eighth sternite; 648, corata, Jalapa, Veracruz, Mexico, eighth tergite, and 649, eighth sternite.

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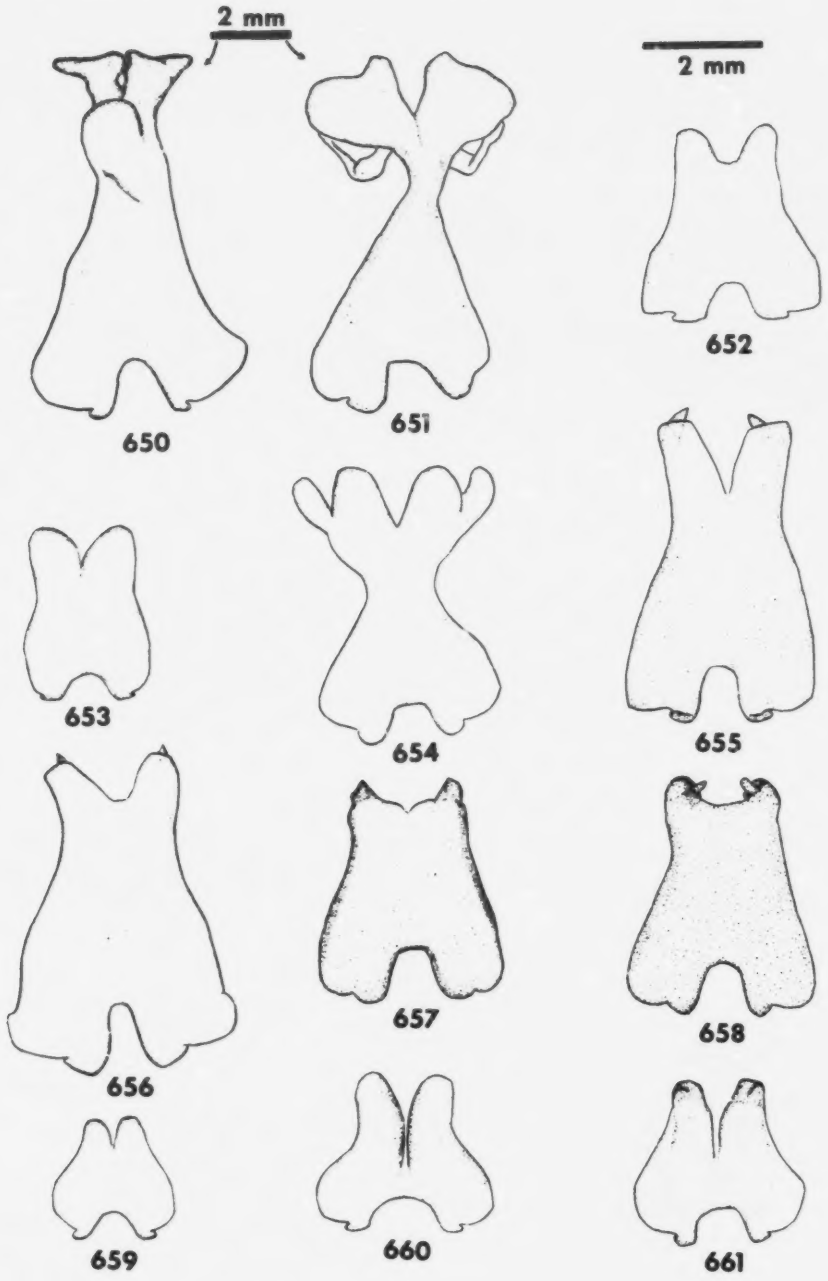

Figures 650-661.--Pero male genitalia: 650, iraza, Irazu, Costa Rica, eighth sternite; 651, contenela, "Guatemala," eighth sternite; 652, honestaria, Chicago, Illinois, eighth sternite; 653, hubneraria, Ithaca, New York, eighth sternite; 654, morrisonaria, Kelwood, Manitoba, eighth sternite; 655, gigantea, Walnut Canyon, Arizona, eighth sternite; 656, mizon, Departure Bay, British Columbia, eighth sternite; 657, macdunnoughi, San Diego, California, eighth sternite; 658, catalina, Santa Catalina Island, California, eighth sternite; 659, modesta, Walnut Canyon, Arizona, eighth sternite; 660, behrensaria, West Fork of Oak Creek Canyon, Arizona, eighth sternite; 661, occidentalis, Hart Prarie, Coconino Co., Arizona, eighth sternite.

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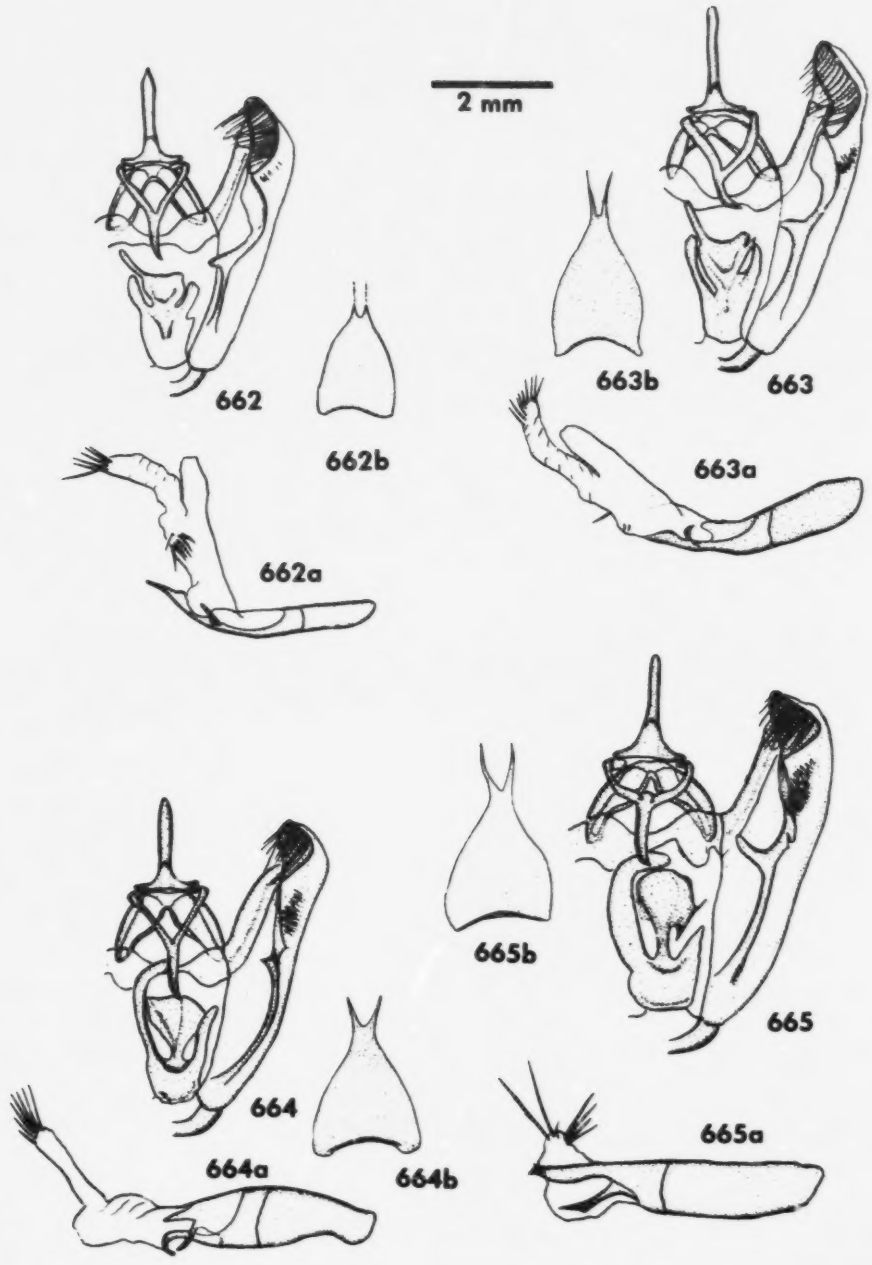

Figures 662-665.--Pero male genitalia: 662, charadrea, Rio Vermelho, Santa Catarina, Brazil, and 662a, aedeagus, and 662b, eighth sternite; 663, imperfectaria, Campo Belo, Rio de Janeiro, Brazil, and 663a, aedeagus, and 663b, eighth sternite; 664, poaphilaria, Blumenau, Santa Catarina, Brazil, and 664a, aedeagus, and 664b, eighth sternite; 665, mollis, Alto da Serra, São Paulo, Brazil, and 665a, aedeagus, and 665b, eighth sternite.

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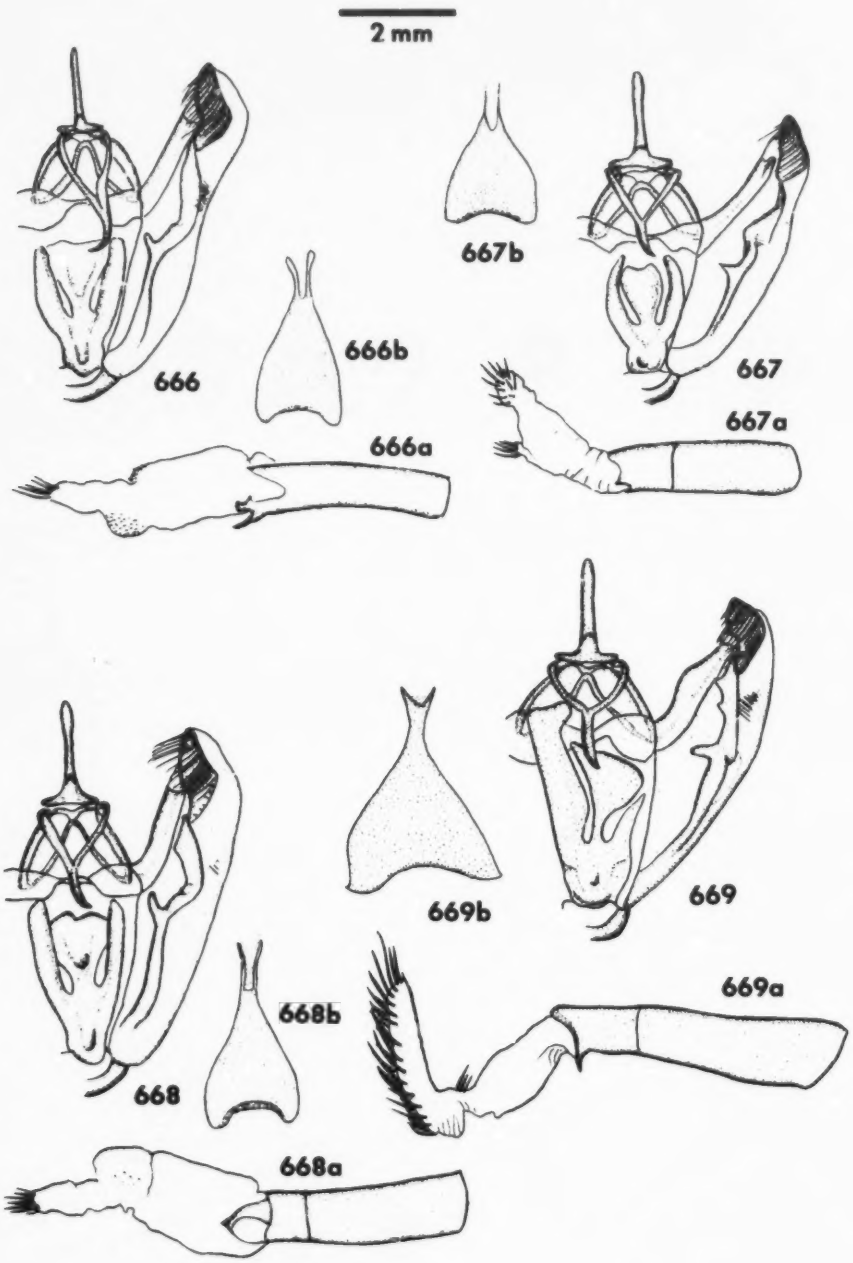

Figures 666-669.--Pero male genitalia: 666, rocanaria, "Santa Cruz," Brazil, and 666a, aedeagus, and 666b, eighth sternite; 667, calinaria, São Paulo, Brazil, and 667a, aedeagus, and 667b, eighth sternite; 668, crocallaria, "Rio," Brazil, and 668a, aedeagus, and 668b, eighth sternite; 669, edentaria, Alto da Serra, São Paulo, Brazil, and 669a, aedeagus, and 669b, eighth sternite.

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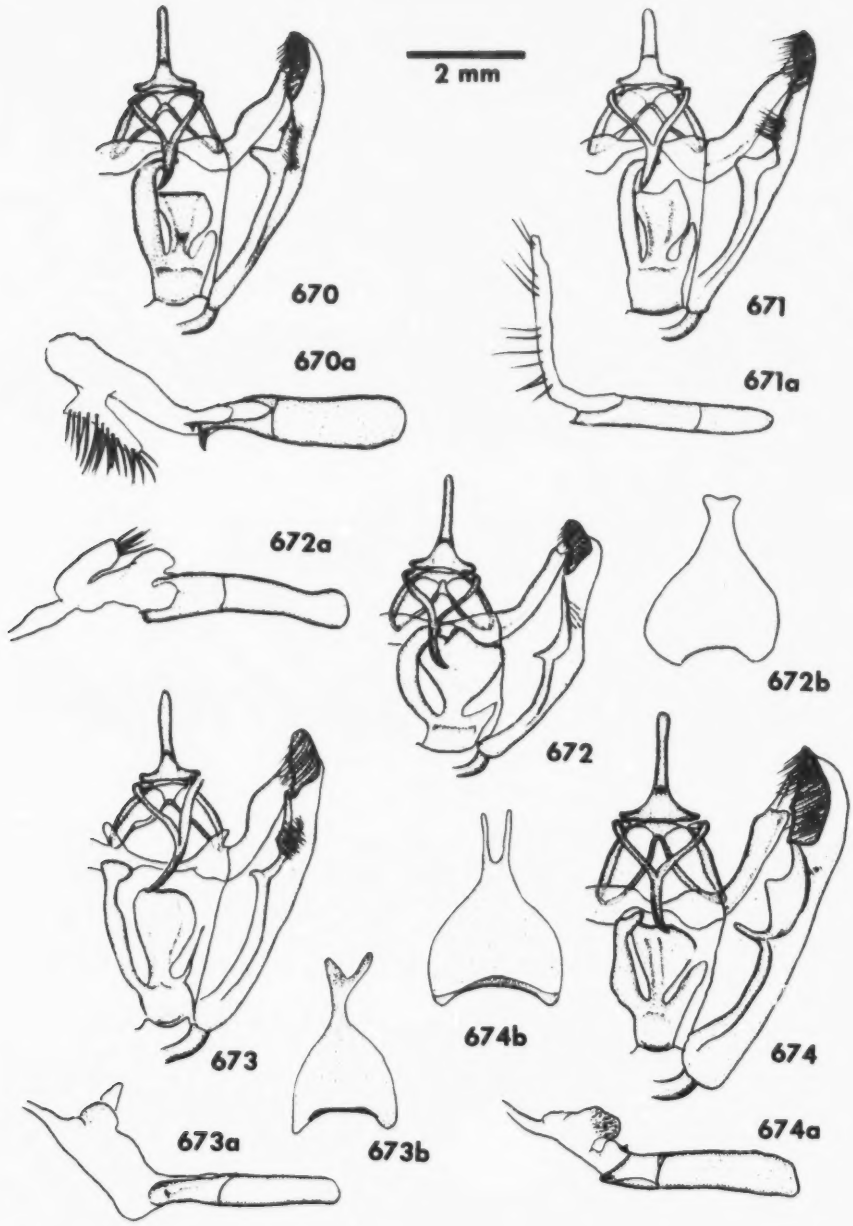

Figures 670–674.--Pero male genitalia: 670, paranaria, Castro, Paraná, Brazil, and 670a, aedeagus; 671, flora, Castro, Paraná, Brazil, and 671a, aedeagus; 672, amica, Limbani, Puno, Peru, and 672a, aedeagus, and 672b, eighth sternite; 673, inconstans, Pelotas, Rio Grande do Sul, Brazil, and 673a, aedeagus, and 673b, eighth sternite; 674, refellaria, Pelotas, Rio Grande do Sul, Brazil, and 674a, aedeagus, and 674b, eighth sternite.

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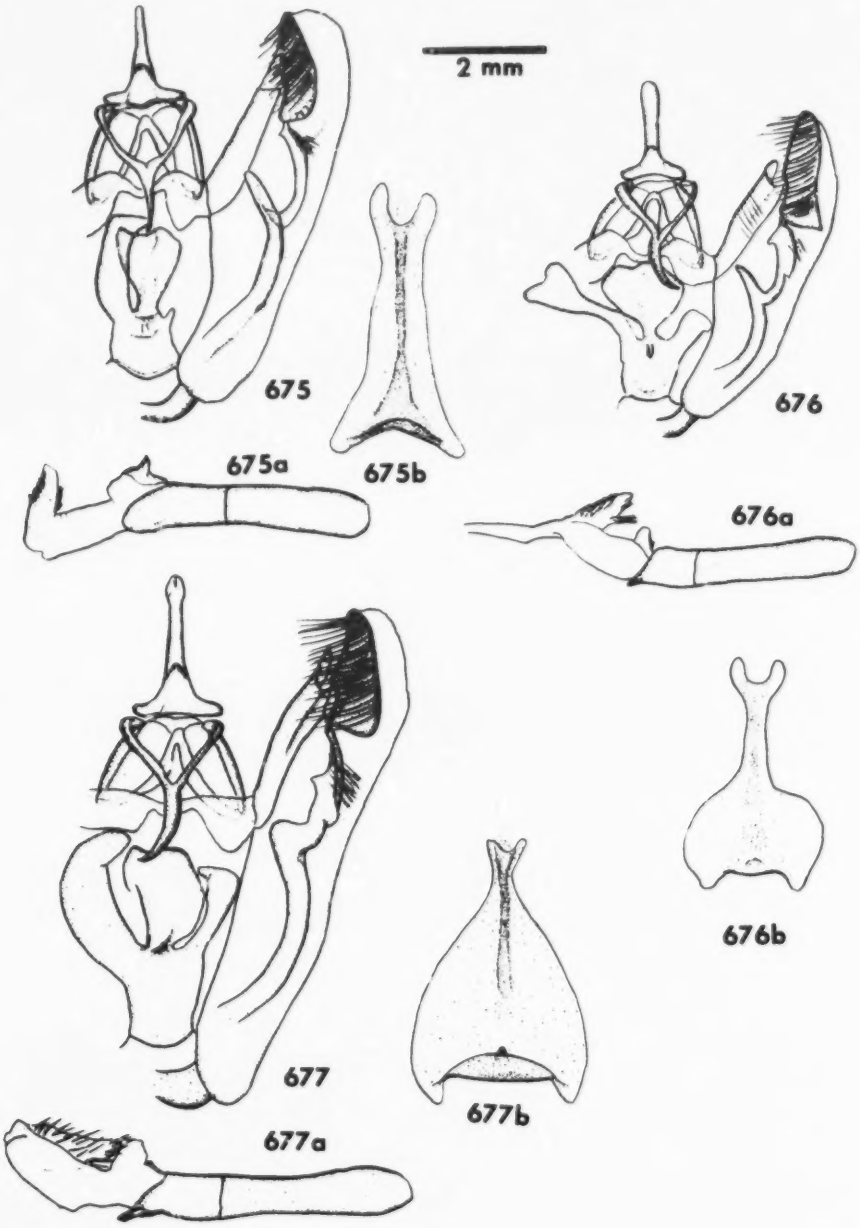

Figures 675-677.--Pero male genitalia: 675, gonopteraria, Espírito Santo, Brazil, and 675a, aedeagus, and 675b, eighth sternite; 676, olivacea, Metan, Salta, Argentina, and 676a, aedeagus, and 676b, eighth sternite; 677, chanchamaya, Chanchamayo, Junin, Peru, and 677a, aedeagus, and 677b, eighth sternite.

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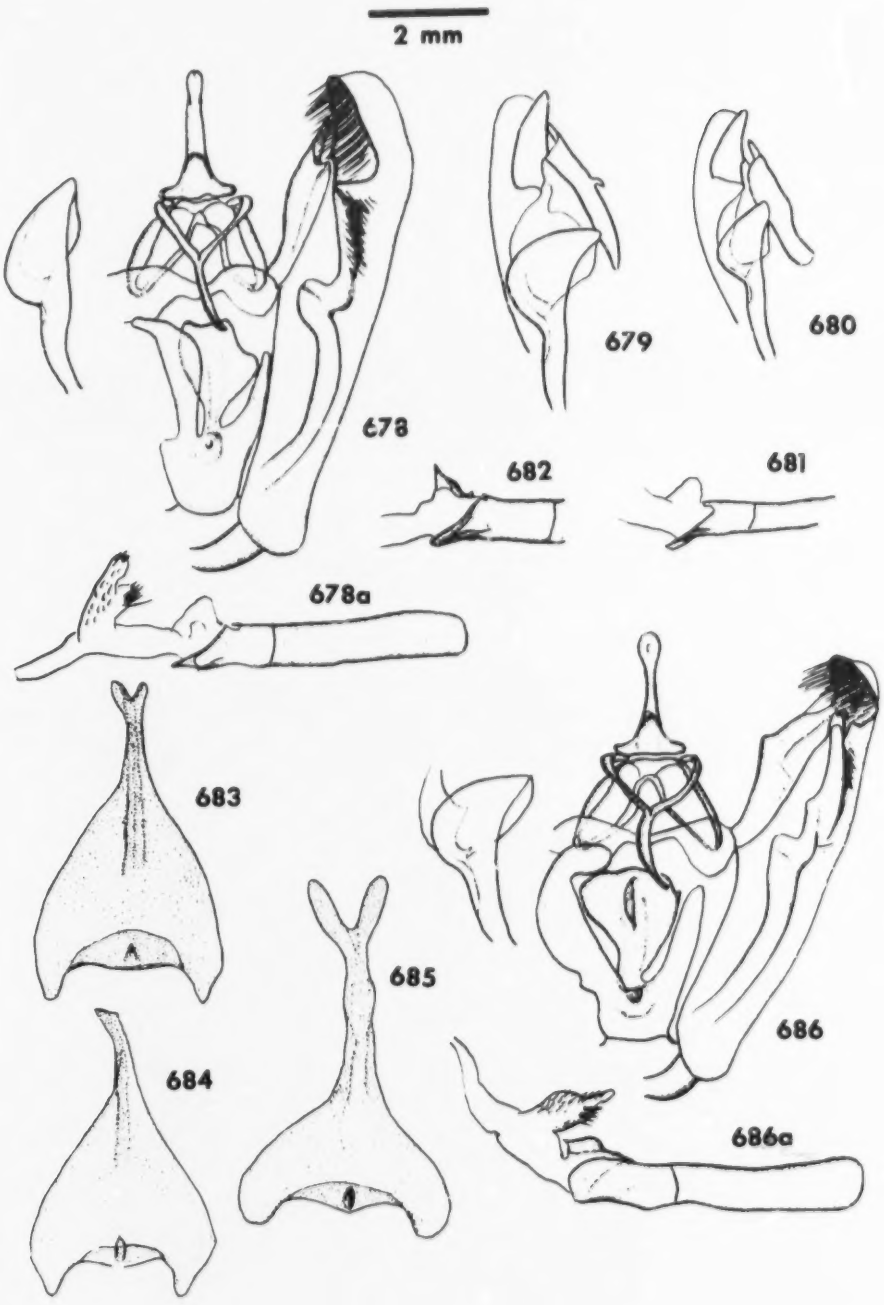

Figures 678-686.--Pero male genitalia: 678, buckleyi, R. Cristal Mayu, Chapare, Bolivia, median process of left valve also shown, and 678a, aedeagus, and 679, "Colombie," part of left valve, and 680, Huigra, Ecuador, part of left valve, and 681, Huigra, Ecuador, tip of aedeagus, and 682, "Colombie," tip of aedeagus, and 683, Nuevo Teutonia, Santa Catarina, Brazil, eighth sternite, and 684, "Colombia," eighth sternite; 685, cinerea, La Oroya, Puno, Peru, eighth sternite, and 686, La Oroya, Puno, Peru, male genitalia, and 686a, aedeagus.

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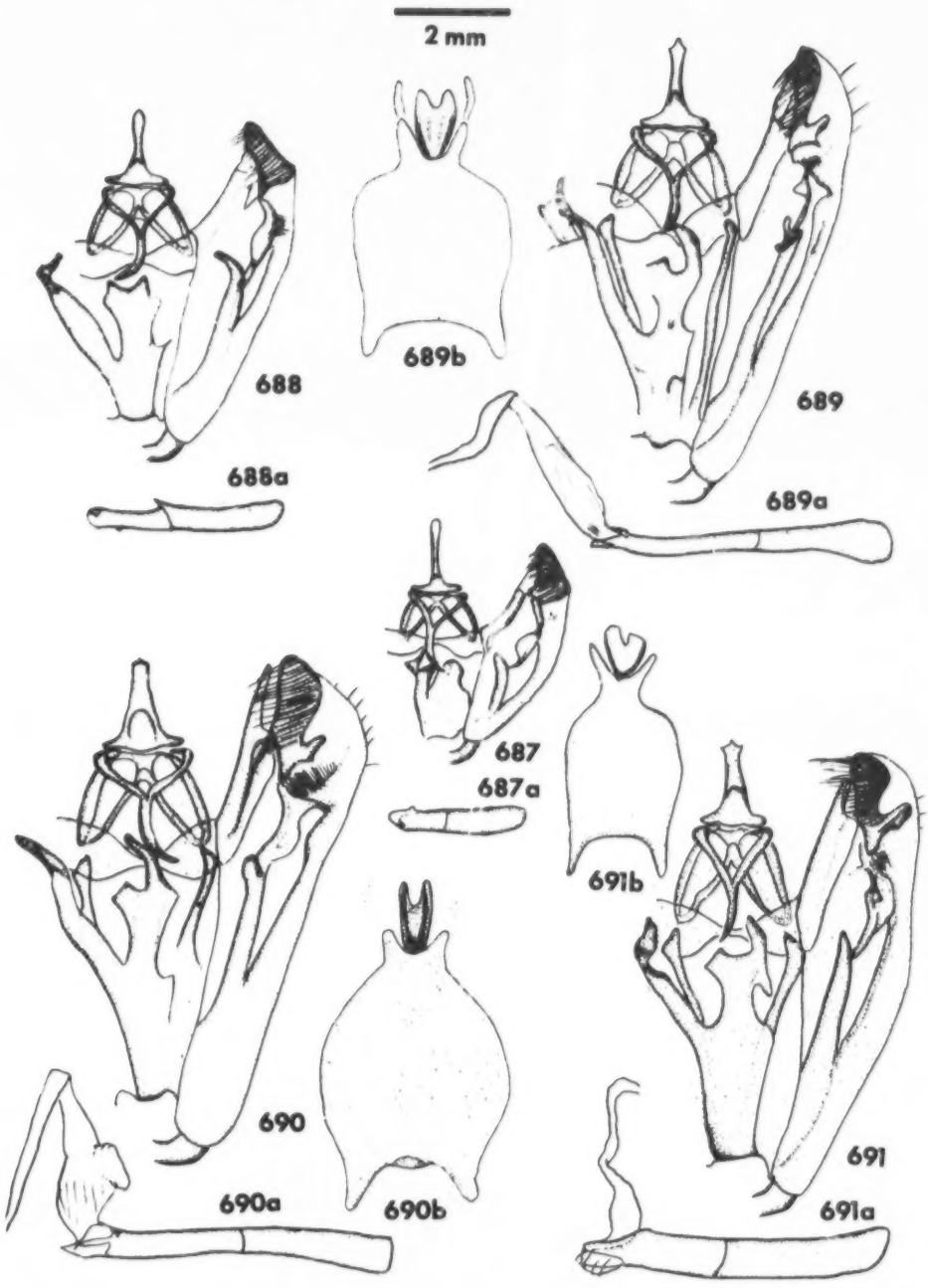

Figures 687-691.--Pero male genitalia: 687, minima, Oconeque, Puno, Peru, and 687a, aedeagus; 688, externata, Castro, Paraná, Brazil, and 688a, aedeagus; 689, maculicosta, Castro, Paraná, Brazil, and 689a, aedeagus, and 689b eighth sternite; 690, marcata, Quincemil, Cusco, Peru, and 690a, aedeagus, and 690b, eighth sternite; 691, coreata, "Colombie," and 691a, aedeagus, and 691b, eighth sternite.

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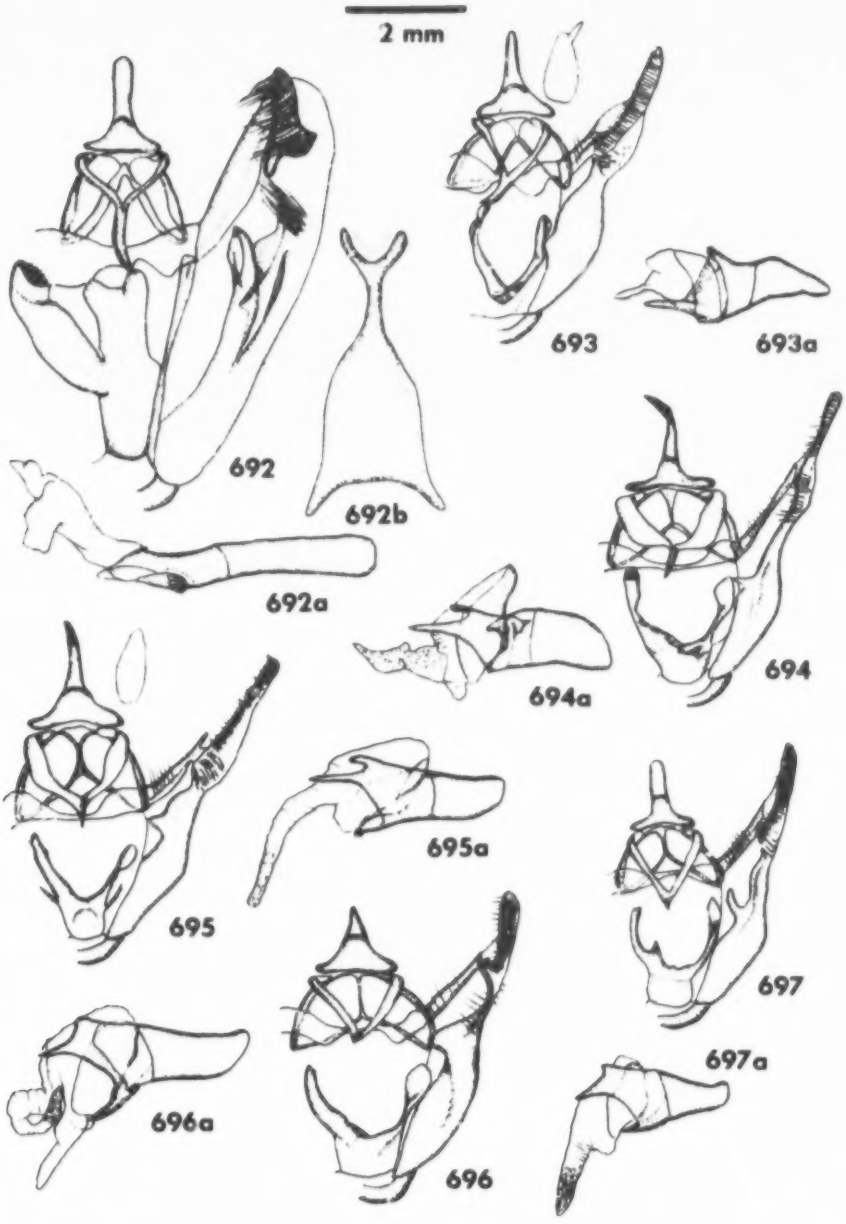

Figures 692-697.--Pero male genitalia: 692, ochriscripta, Corvico, La Paz, Bolivia, and 692a, aedeagus, and 692b, eighth sternite; 693, velutina, Castro, Paraná, Brazil, and 693a, aedeagus; 694, habenaria, "Rio Janeiro," Brazil, and 694a, aedeagus; 695, kathina, "St. Catherines," Brazil, and 695a, aedeagus; 696, hanebaria, Neu Bremen, Santa Catarina, Brazil, and 696a, aedeagus; 697, fea, Castro, Paraná, Brazil, and 697a, aedeagus.

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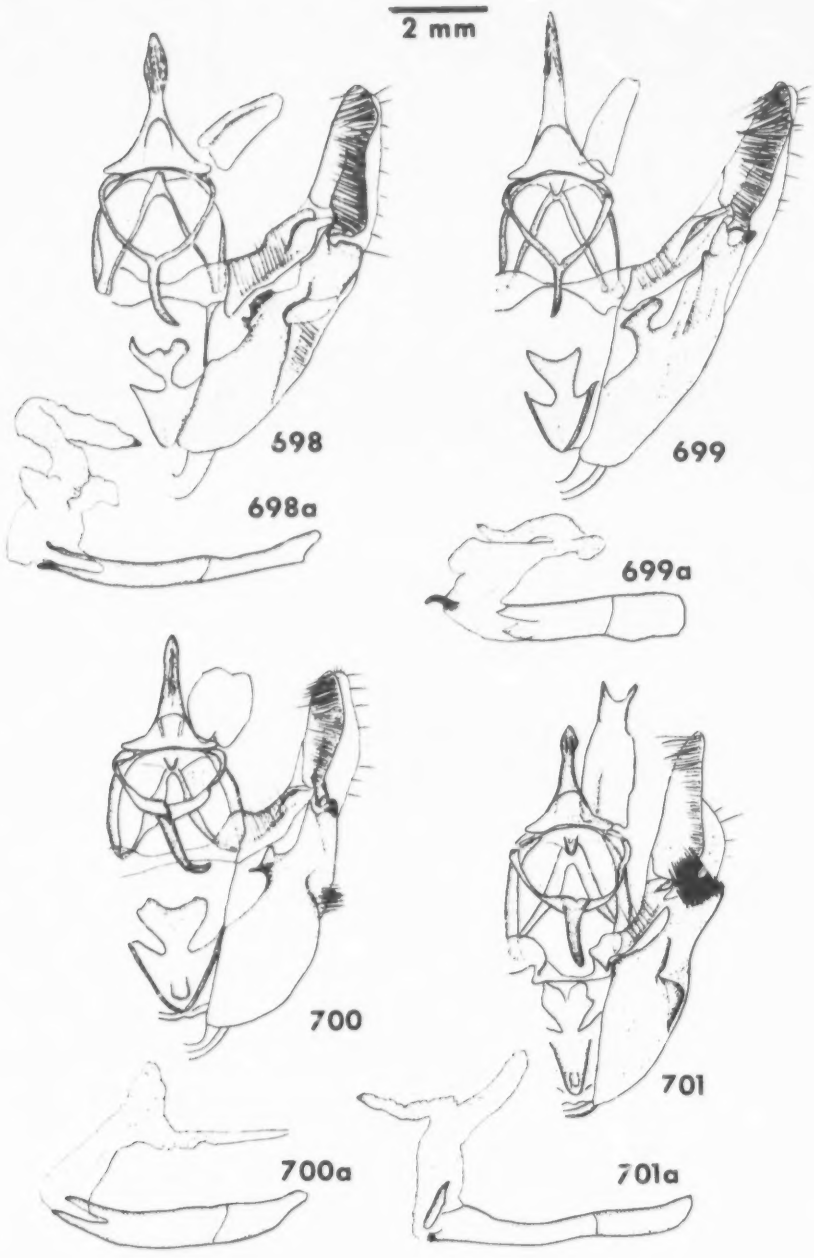

Figures 698-701.--Pero male genitalia: 698, algerna, Huancabamba, Pasco, Peru, and 698a, aedeagus; 699, moritzi, Rancho Grande, Aragua, Venezuela, and 699a, aedeagus; 700, propinqua, Volcancito, Tolima, Colombia, and 700a, aedeagus; 701, spina, Volcan Santa Maria, Quezaltenango, Guatemala, and 701a, aedeagus.

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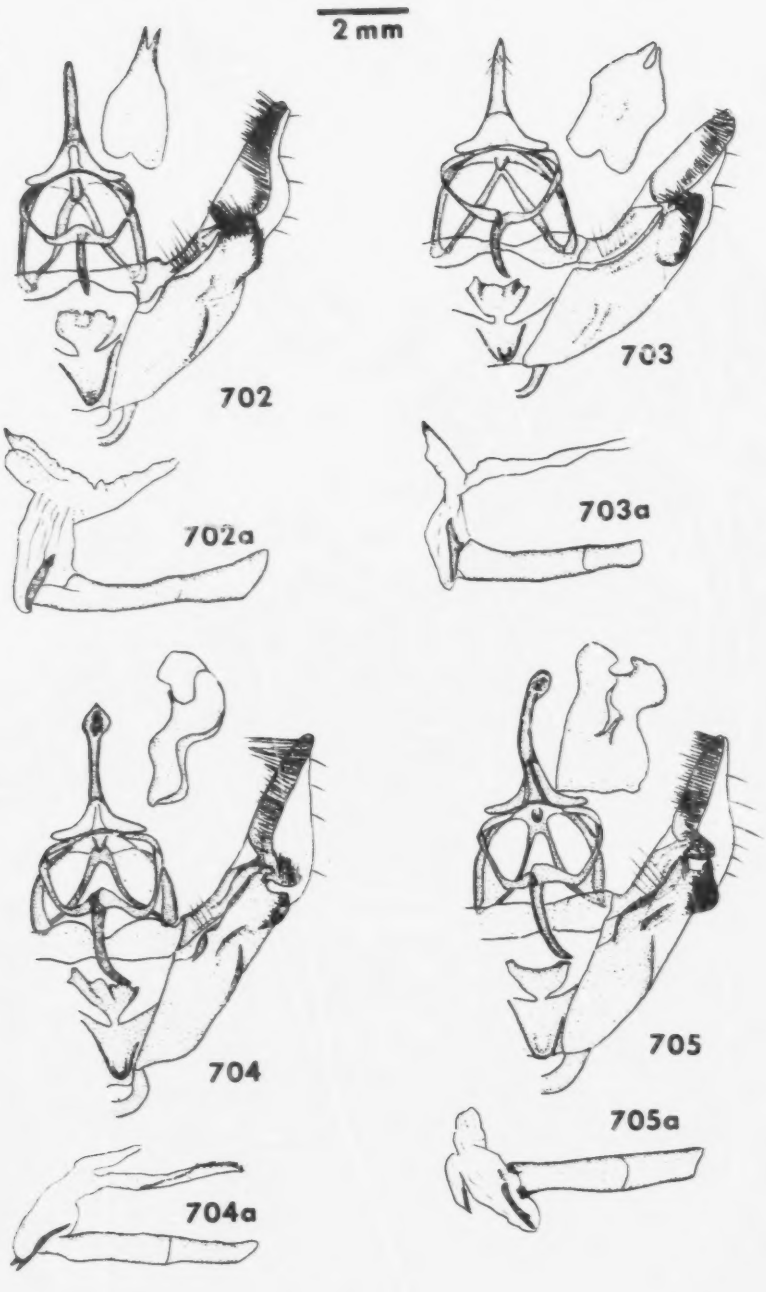

Figures 702-705.--Pero male genitalia: 702, pobrata, Tuis, Cartago, Costa Rica, and 702a, aedeagus; 703, mnasilaria, Rancho Grande, Aragua, Venezuela, and 703a, aedeagus; 704, turba, Huancabamba, Pasco, Peru, and 704a, aedeagus; 705, nasala, Incachaca, Cochabamba, Bolivia, and 705a, aedeagus.

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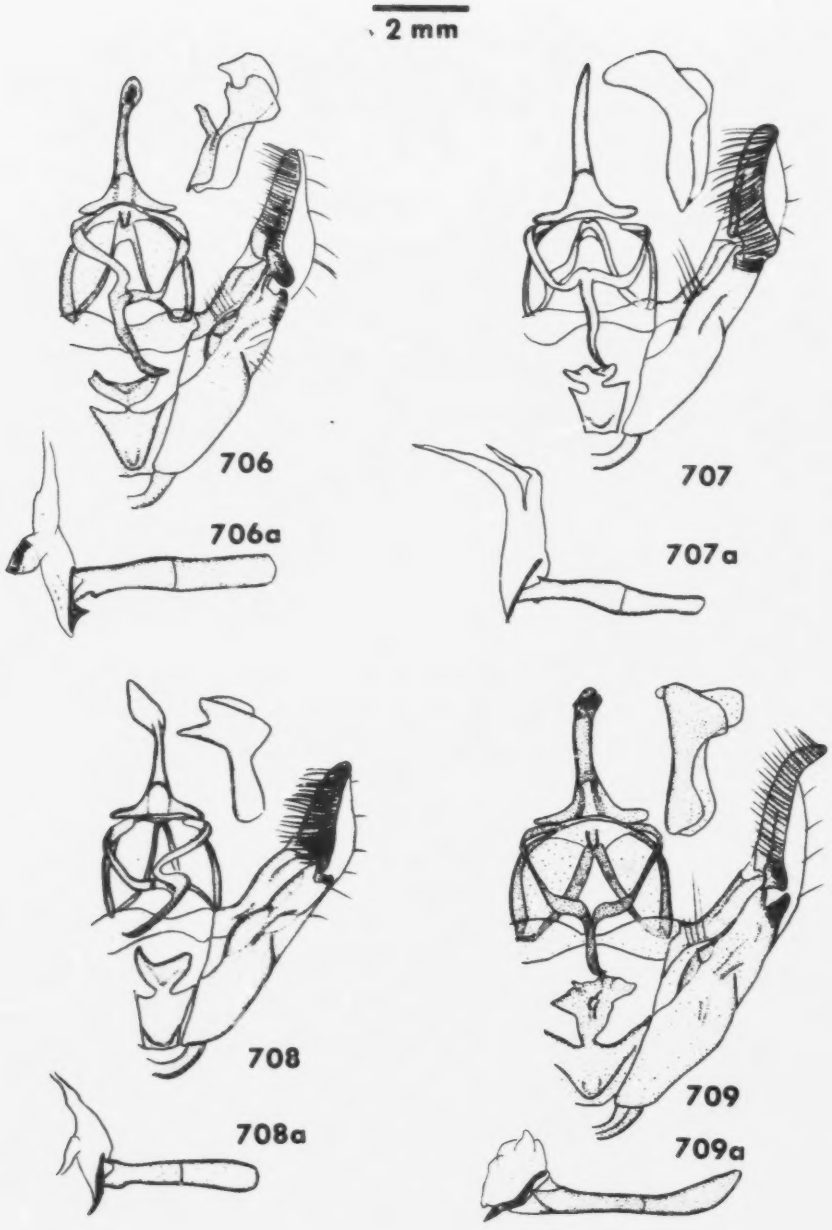

Figures 706-709.—Pero male genitalia: 706, pala, Loja, Ecuador, and 706a, aedeagus; 707, amniculata, Cushi, Huánuco, Peru, and 707a, aedeagus; 708, mitraria, Hacienda Cayandeled, Ecuador, and 708a, aedeagus; 709, periculosaria, Oconeque, Puno, Peru, and 709a, aedeagus.

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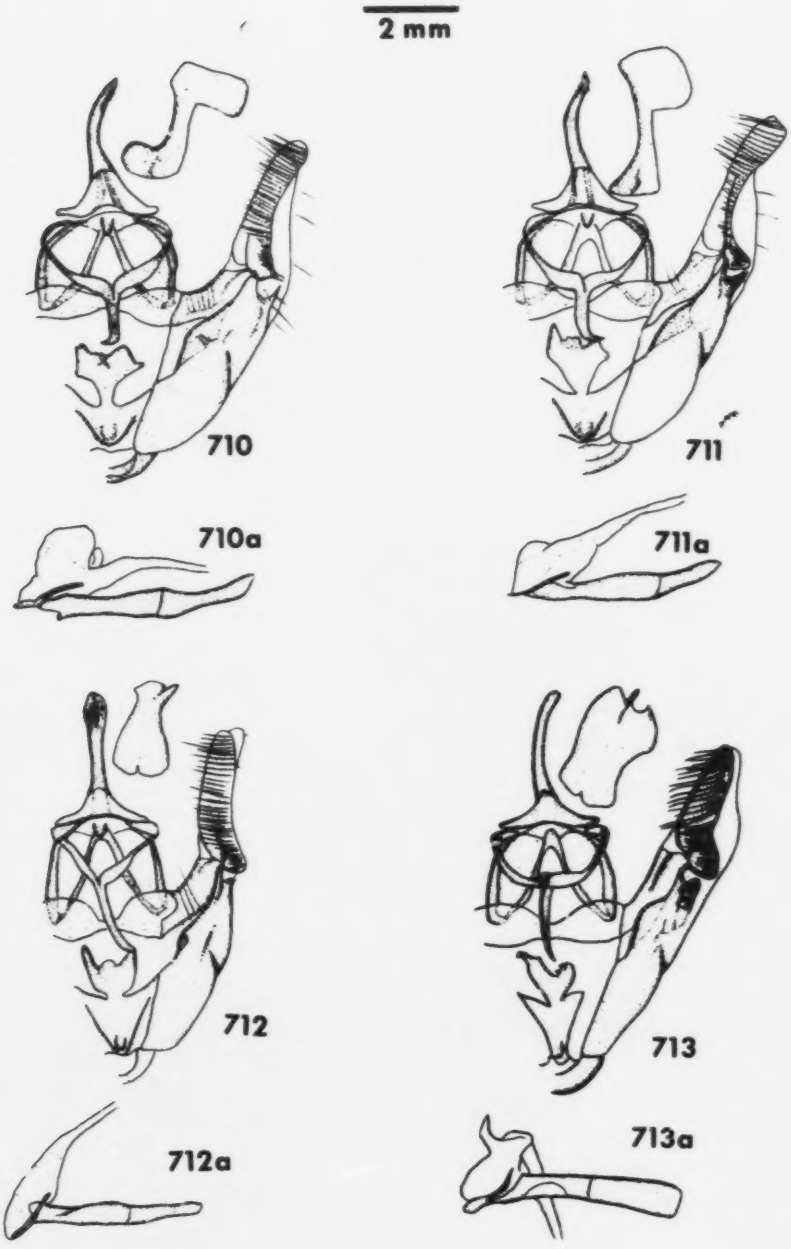

Figures 710-713.--Pero male genitalia: 710, caliginosa, Tochesito, Tolima, Colombia, and 710a, aedeagus; 711, fawna, "Colombie," and 711a, aedeagus; 712, ochreicosta, Tochesito, Tolima, Colombia, and 712a, aedeagus; 713, cyclodaria, Incachaca, Cochabamba, Bolivia, and 713a, aedeagus.

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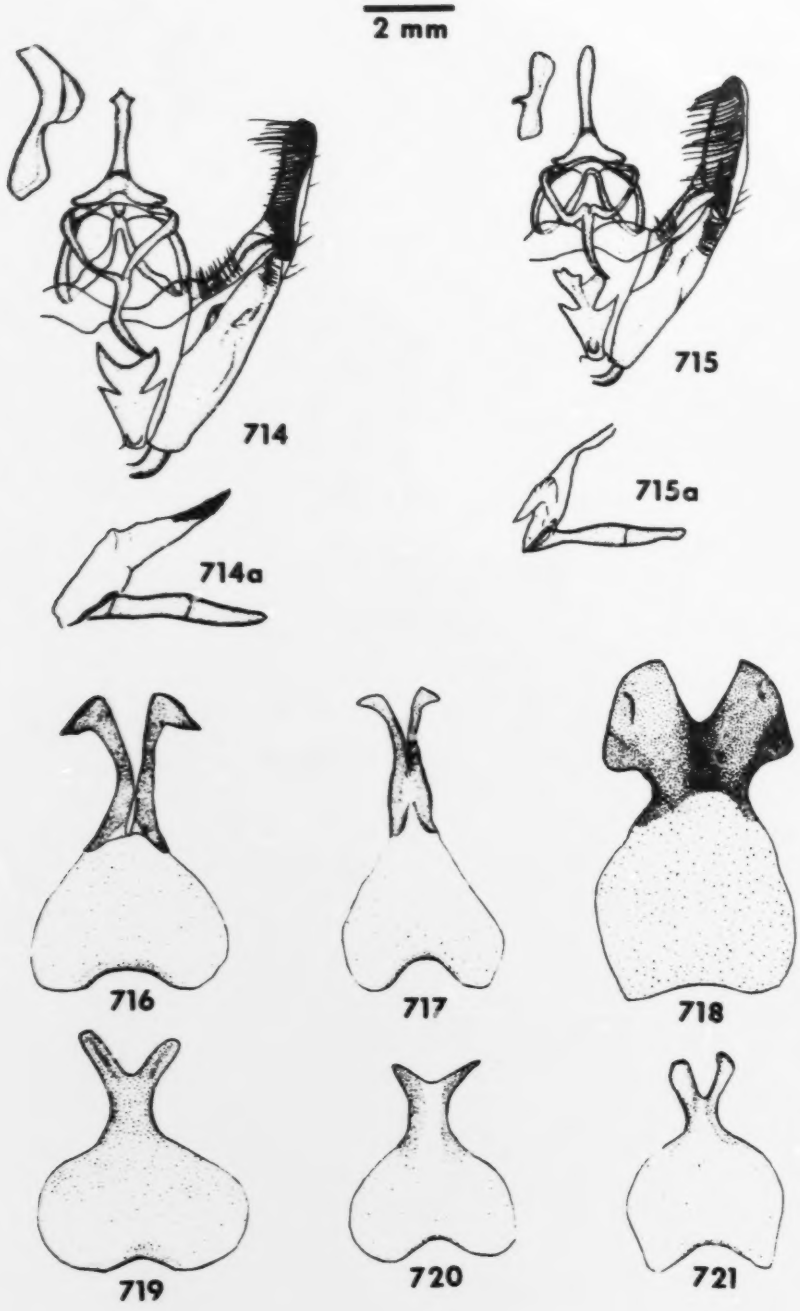

Figures 714-721.--Pero male genitalia: 714, xylinaria, Alto Paraná, Argentina, and 714a, aedeagus; 715, isotenes, Mérida, Venezuela, and 715a, aedeagus; 716, algerna, Huancabamba, Pasco, Peru, eighth sternite; 717, moritzi, Monte Tolima, Colombia, eighth sternite; 718, propinqua, Volcancito, Tolima, Colombia, eighth sternite; 719, spina, Rosario, Honduras, eighth sternite; 720, pobrata, Tuis, Cartago, Costa Rica, eighth sternite; 721, mnasilaria, Hansa Humboldt, Santa Catarina, Brazil, eighth sternite.

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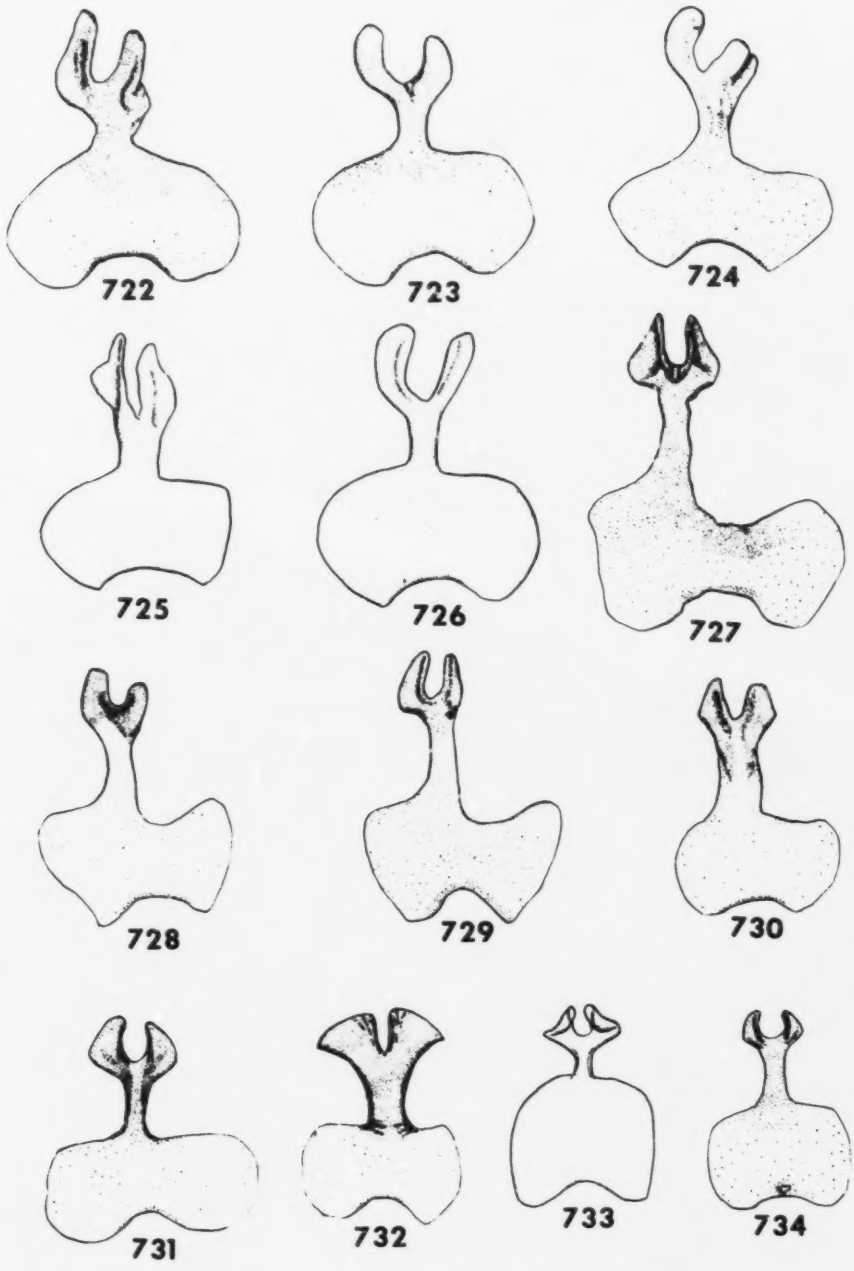

Figures 722-734.--Pero male genitalia: 722, turba, Huancabamba, Pasco, Peru, eighth sternite; 723, nasala, Incachaca, Cochabamba, Bolivia, eighth sternite; 724, pala, Loja, Ecuador, eighth sternite; 725, amniculata, Cushi, Huánuco, Peru, eighth sternite; 726, mitraria, Hacienda Cayandeled, Ecuador, eighth sternite; 727, periculosaria, Oconeque, Puno, Peru, eighth sternite; 728, caliginosa, Tochesito, Tolima, Colombia, eighth sternite; 729, fawna, "Colombie," eighth sternite; 730, ochreicosta, Tochesito, Tolima, Colombia, eighth sternite; 731, cyclodaria, Incachaca, Cochabamba, Bolivia, eighth sternite; 732, xylinaria, Santa Catarina, Brazil, eighth sternite, and 733, Volcan Santa Maria, Quezaltenango, Guatemala, eighth sternite; 734, isotenes, Mérida, Venezuela, eighth sternite.

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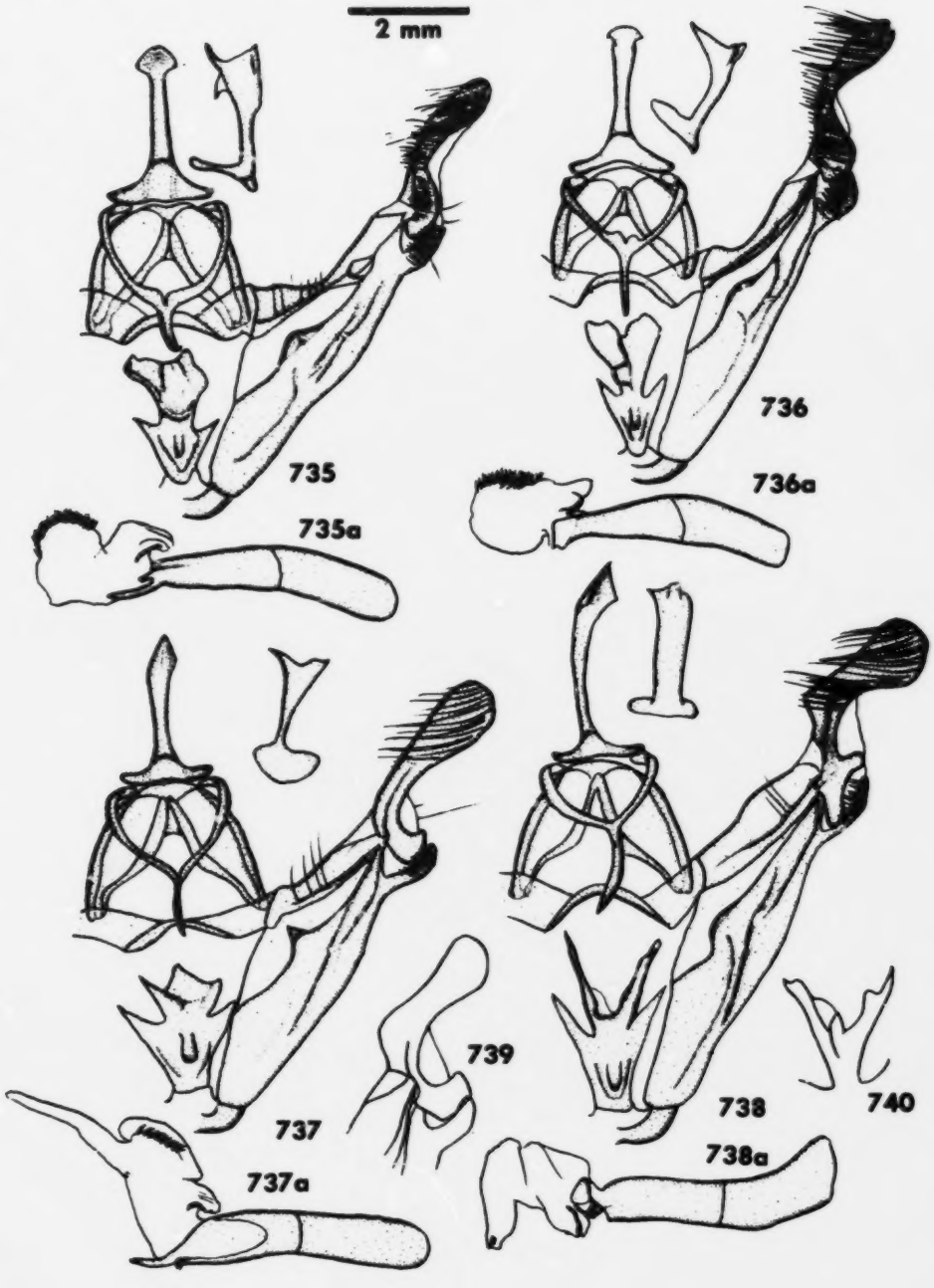

Figures 735-740.--Pero male genitalia: 735, pretensa, Huancabamba, Pasco, Peru, and 735a, aedeagus; 736, supposa, Canon del Tolima, Tolima, Colombia, and 736a, aedeagus; 737, derticulata, La Union, Puno, Peru, and 737a, aedeagus; 738, ministrella, Canon del Tolima, Tolima, Colombia, and 738a, aedeagus, and 739, Chachapoyas, Amazonas, Peru, tip of right valve, and 740, Chachapoyas, Amazonas, Peru, juxta.

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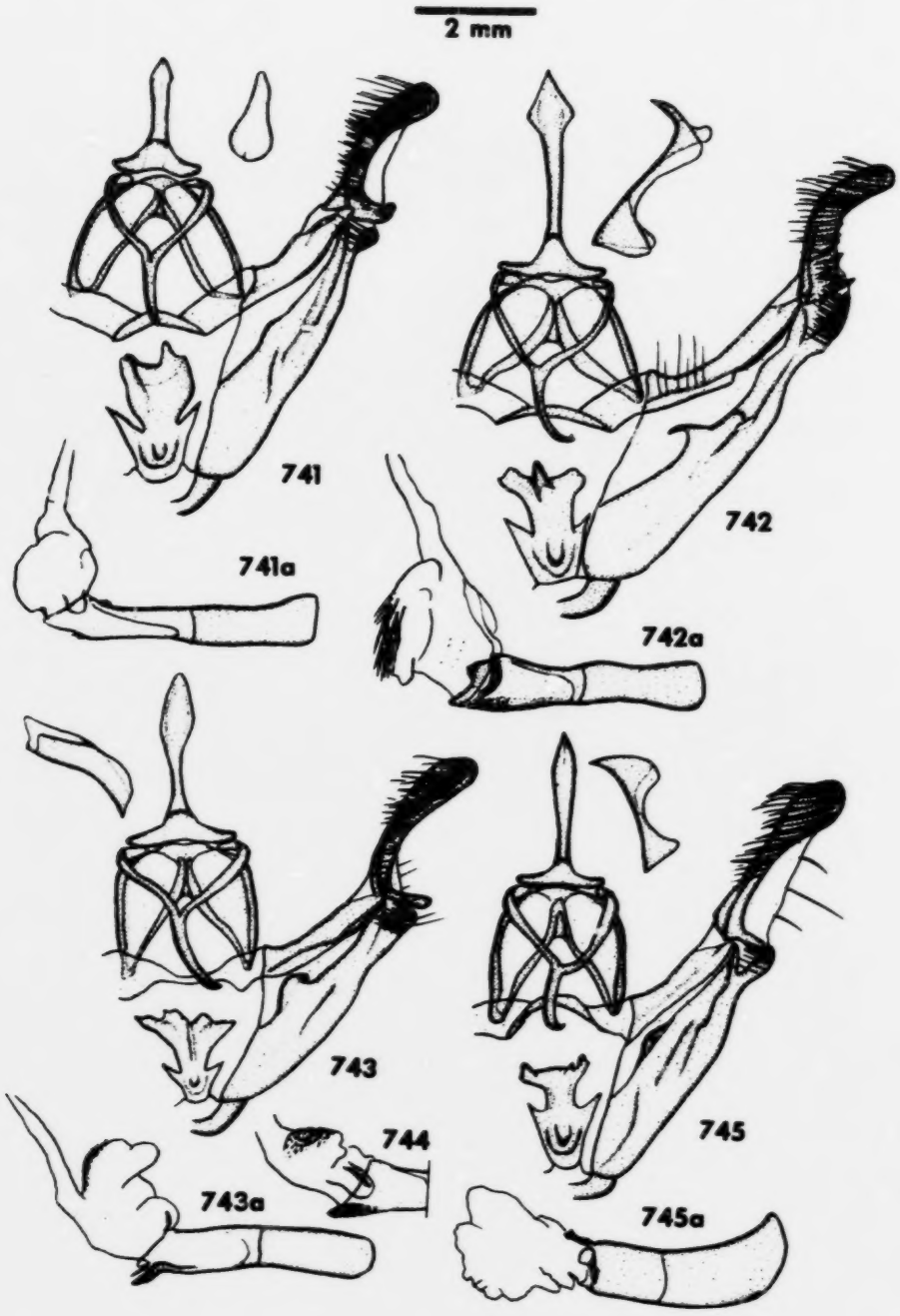

Figures 741-745.--Pero male genitalia: 741, cana, La Union, Puno, Peru, and 741a, aedeagus; 742, spada, Monte Socorro, Tolima, Colombia, and 742a, aedeagus; 743, ramulata, Huancabamba, Pasco, Peru, and 743a, aedeagus, and 744, Incachaca, Cochabamba, Bolivia, tip of aedeagus; 745, absenta, La Oroya, Puno, Peru, and 745a, aedeagus.

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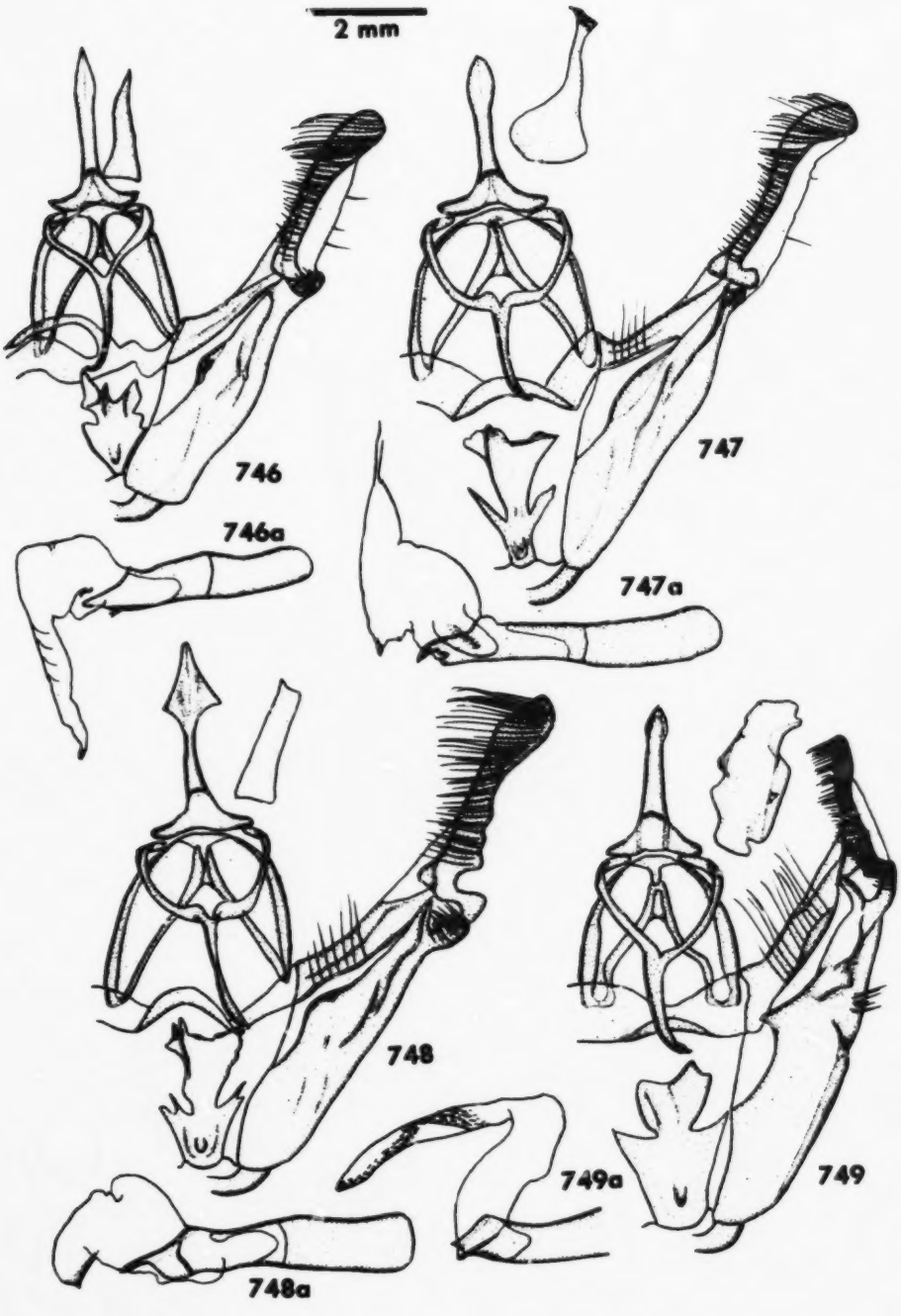

Figures 746-749.—Pero male genitalia: 746, levera, Rancho Grande, Aragua, Venezuela, and 746a, aedeagus; 747, strapa, Chiriqui, Panama, and 747a, aedeagus; 748, rosota, Orosi, Cartago, Costa Rica, and 748a, aedeagus; 749, ravida, Incachaca, Cochabamba, Bolivia, and 749a, aedeagus.

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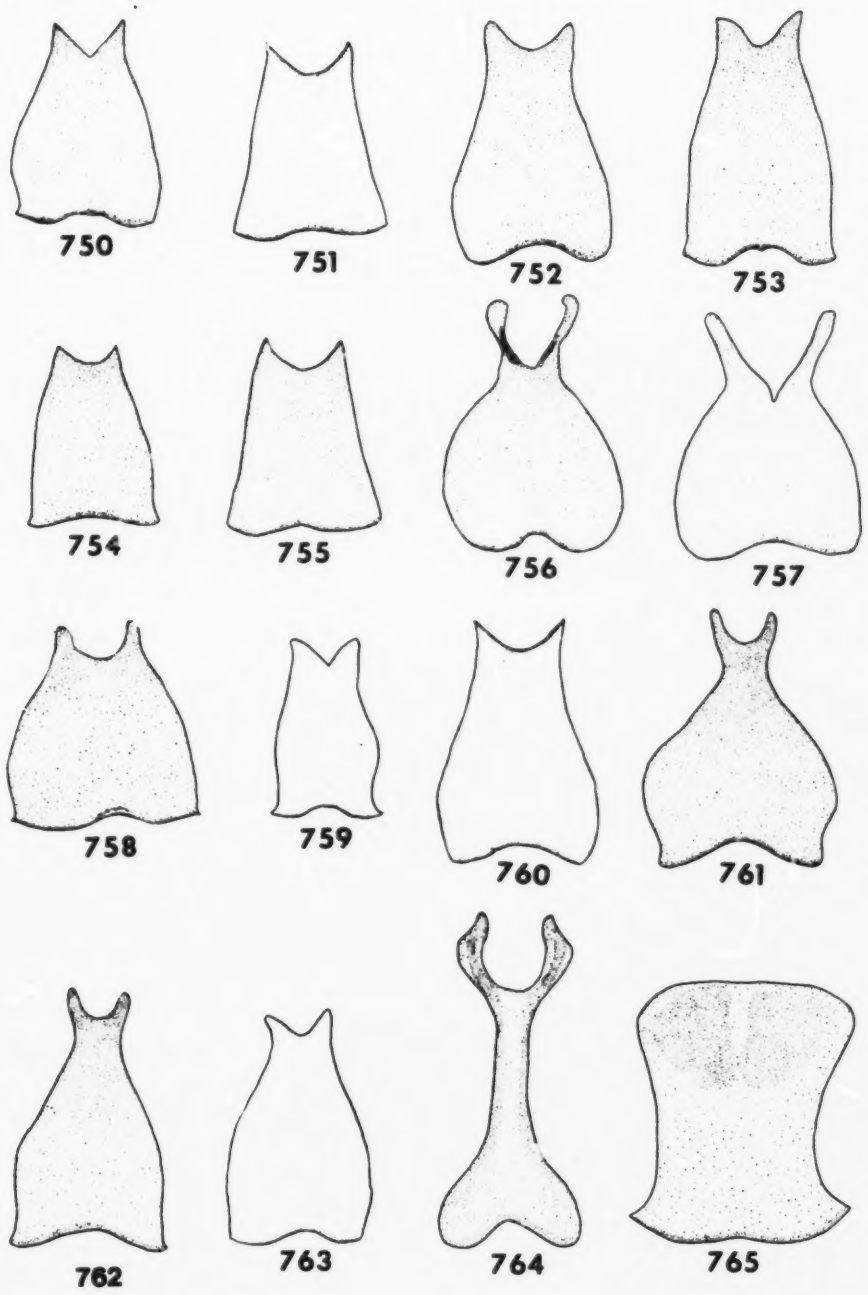

Figures 750–765.—Pero male genitalia: 750, pretensa, "Bolivia," eighth sternite; 751, supposa, Canon del Tolima, Colombia, eighth sternite; 752, denticulata, Incachaca, Cochabamba, Bolivia, eighth sternite; 753, ministrella, Tolima, Colombia, eighth sternite; 754, cana, Yahuarmayo, Puno, Peru, eighth sternite; 755, spada, Monte Socorro, Tolima, Colombia, eighth sternite; 756, ramulata, Oconeque, Puno, Peru, eighth sternite, and 757, Uruyacu, Peru, eighth sternite, and 758, Incachaca, Cochabamba, Bolivia, eighth sternite; 759, absenta, La Oroya, Puno, Peru, eighth sternite; 760, levera, Rancho Grande, Aragua, Venezuela, eighth sternite; 761, strapa, Chiriqui, Panama, eighth sternite, and 762, Tingo Maria, Huánuco, Peru, eighth sternite; 763, rosota, Orosi, Cartago, Costa Rica, eighth sternite; 764, ravida, Incachaca, Cochabamba, Bolivia, eighth sternite, and 765, Incachaca, Cochabamba, Bolivia, eighth tergite.

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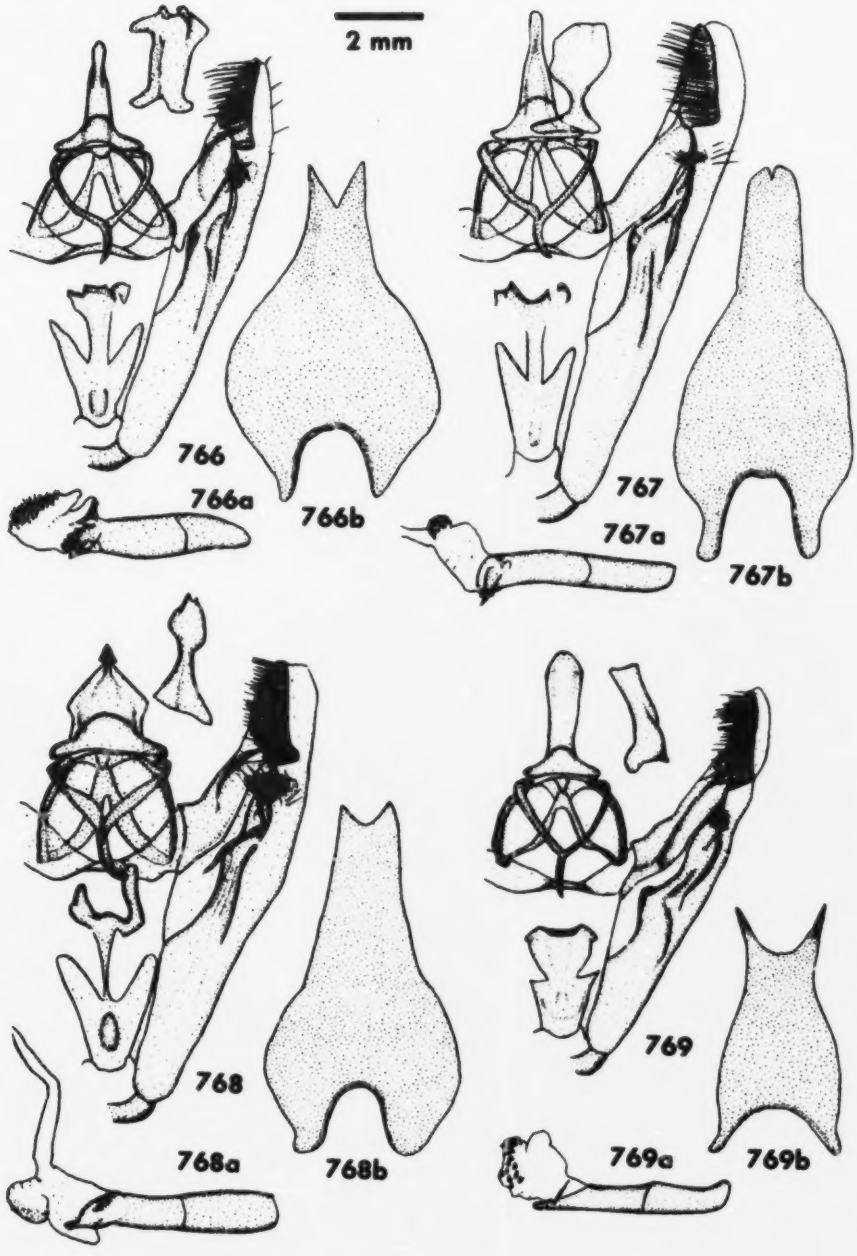

Figures 766-769.—Pero male genitalia: 766, odonaria, Puerto Elegio, Oaxaca, Mexico, and 766a, aedeagus, and 766b, eighth sternite; 767, ogapoea, Tingo Maria, Huánuco, Peru, and 767a, aedeagus, and 767b, eighth sternite; 768, derecha, Rio Songo, La Paz, Bolivia, and 768a, aedeagus, and 768b, eighth sternite; 769, caustomeris, Chaquimayo, Peru, and 769a, aedeagus, and 769b, eighth sternite.

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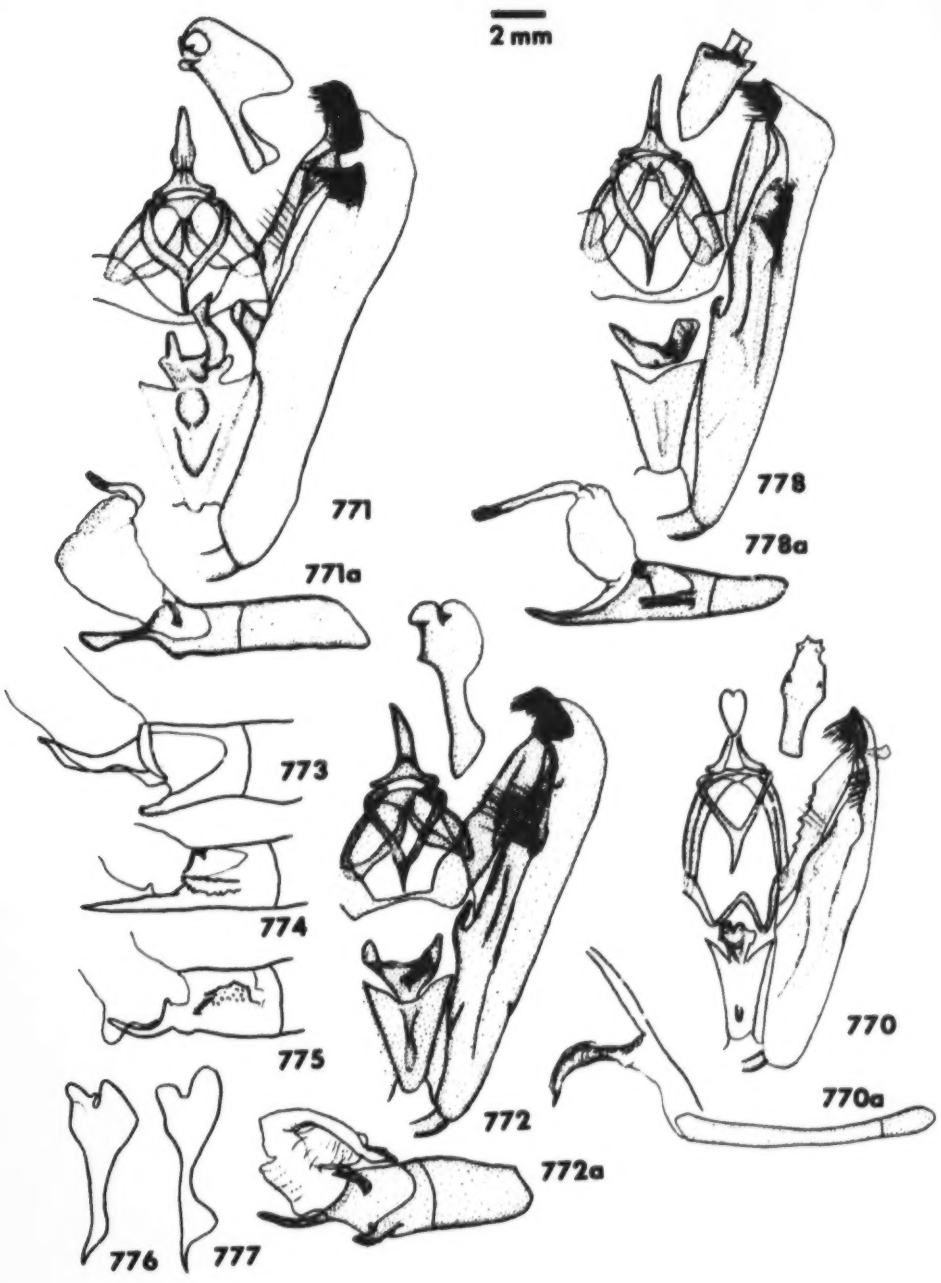

Figures 770-778.--Pero male genitalia: 770, lindigi, Uruhuasi, Peru, and 770a, aedeagus; 771, parambensis, Paramba, Imbabura, Ecuador, and 771a, aedeagus; 772, tabitha, Incachaca, Cochabamba, Bolivia, and 772a, aedeagus, and 773, Popayán, Cauca, Colombia, tip of aedeagus, and 774, Rancho Grande, Aragua, Venezuela, tip of aedeagus, and 775, Orosi, Cartago, Costa Rica, tip of aedeagus, and 776, Rancho Grande, Aragua, Venezuela, subscaphium, and 777, Orosi, Cartago, Costa Rica, subscaphium; 778, guacamaya, Rancho Grande, Aragua, Venezuela, and 778a, aedeagus.

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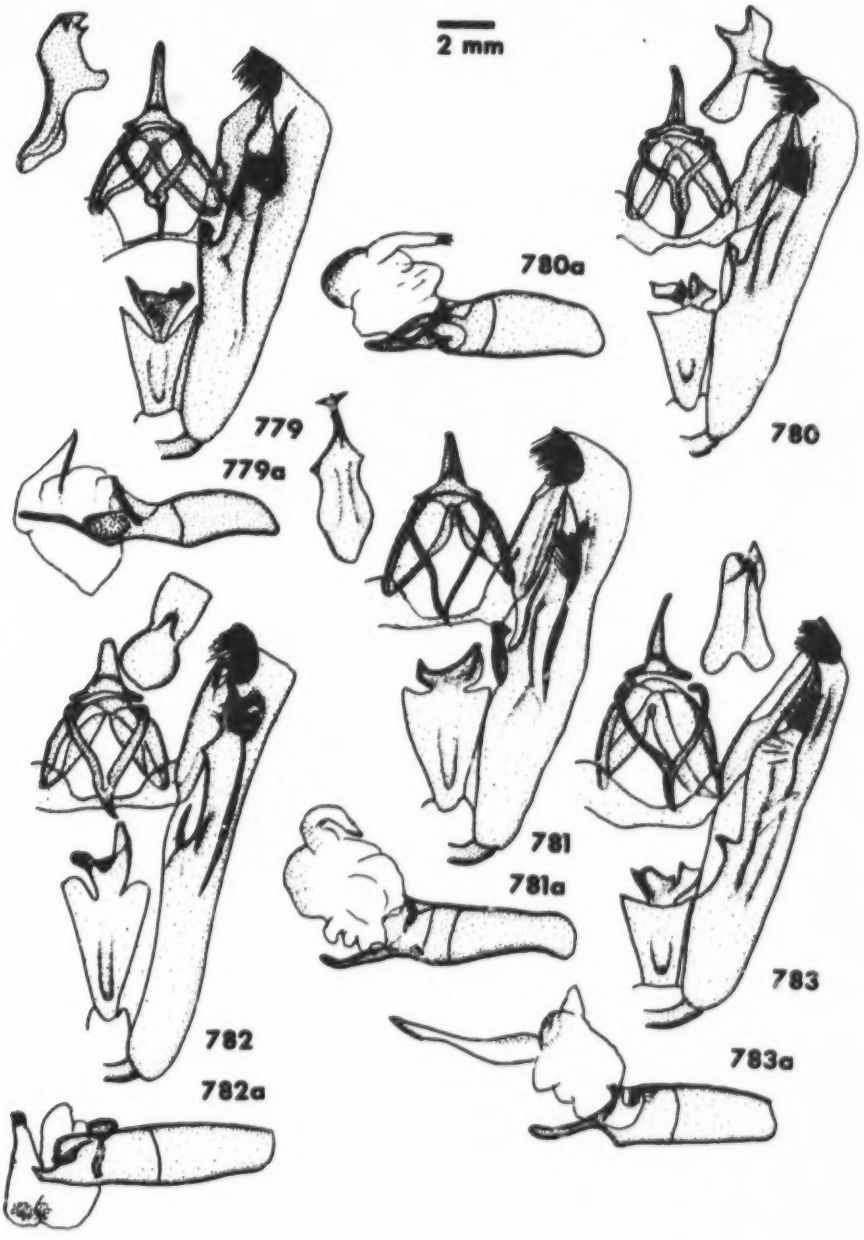

Figures 779-783.—Pero male genitalia: 779, curvifera, Huallaga, Peru, and 779a, aedeagus; 780, xylonaria, Huambo, Amazonas, Peru, and 780a, aedeagus; 781, trena, San Gabon, Puno, Peru, and 781a, aedeagus; 782, alboculata, La Union, Puno, Peru, and 782a, aedeagus; 783, refna, Incachaca, Cochabamba, Bolivia, and 783a, aedeagus.

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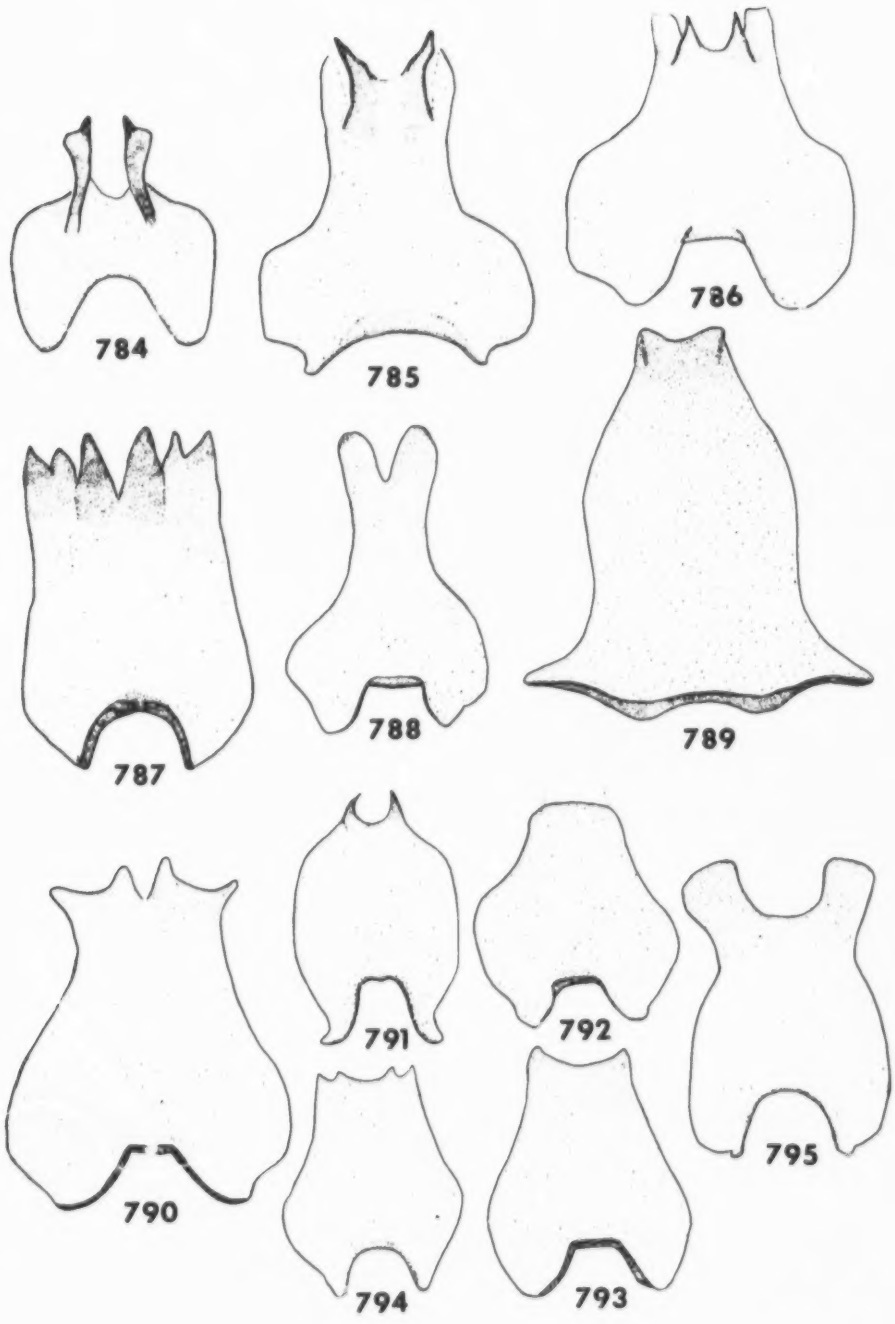

Figures 784-795.--Pero male genitalia: 784, parambensis, Paramba, Imbabura, Ecuador, eighth sternite; 785, tabitha, Yahuarmayo, Puno, Peru, eighth sternite; 786, guacamaya, Rancho Grande, Aragua, Venezuela, eighth sternite; 787, curvifera, Huallaga, Peru, eighth sternite; 788, xylonaria, Huambo, Amazonas, Peru, eighth sternite; 789, trena, Loja, Ecuador, eighth tergite, and 790, Loja, Ecuador, eighth sternite; 791, alboculata, La Union, Puno, Peru, eighth sternite; 792, refna, Incachaca, Cochabamba, Bolivia, eighth sternite; 793, alaga, Huancabamba, Pasco, Peru, eighth sternite; 794, inferna, Uruhuasi, Peru, eighth sternite; 795, dunca, Mesopotamia, Antioquia, Colombia, eighth sternite.

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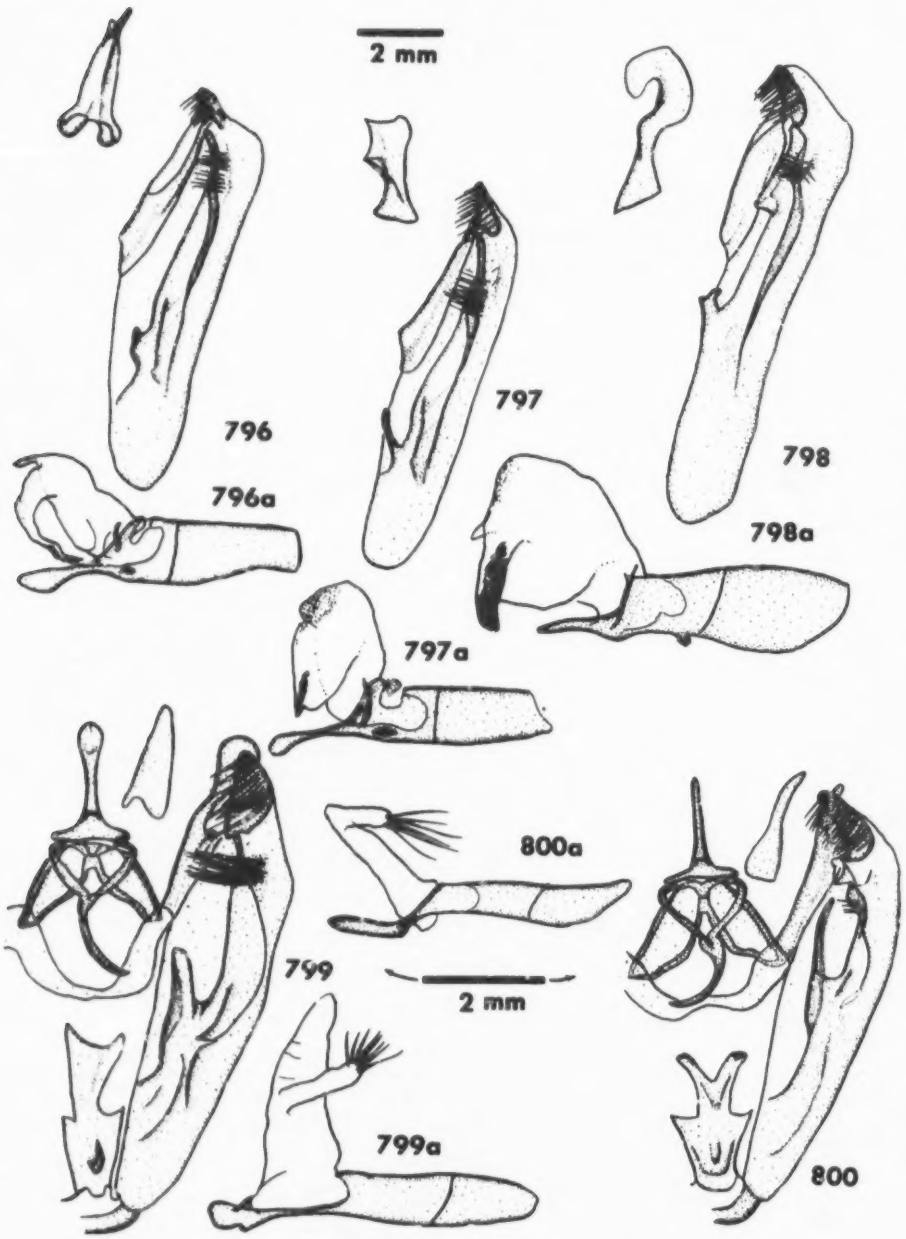

Figures 796-800.--Pero male genitalia: 796, alaga, Huallaga, Peru, and 796a, aedeagus; 797, inferna, Uruhuasi, Peru, and 797a, aedeagus; 798, dunca, Monte Tolima, Tolima, Colombia, and 798a, aedeagus; 799, caerula, Cerro Pelon, Oaxaca, Mexico, and 799a, aedeagus; 800, verda, Rosario, San Jacinto Mts., Honduras, and 800a, aedeagus.

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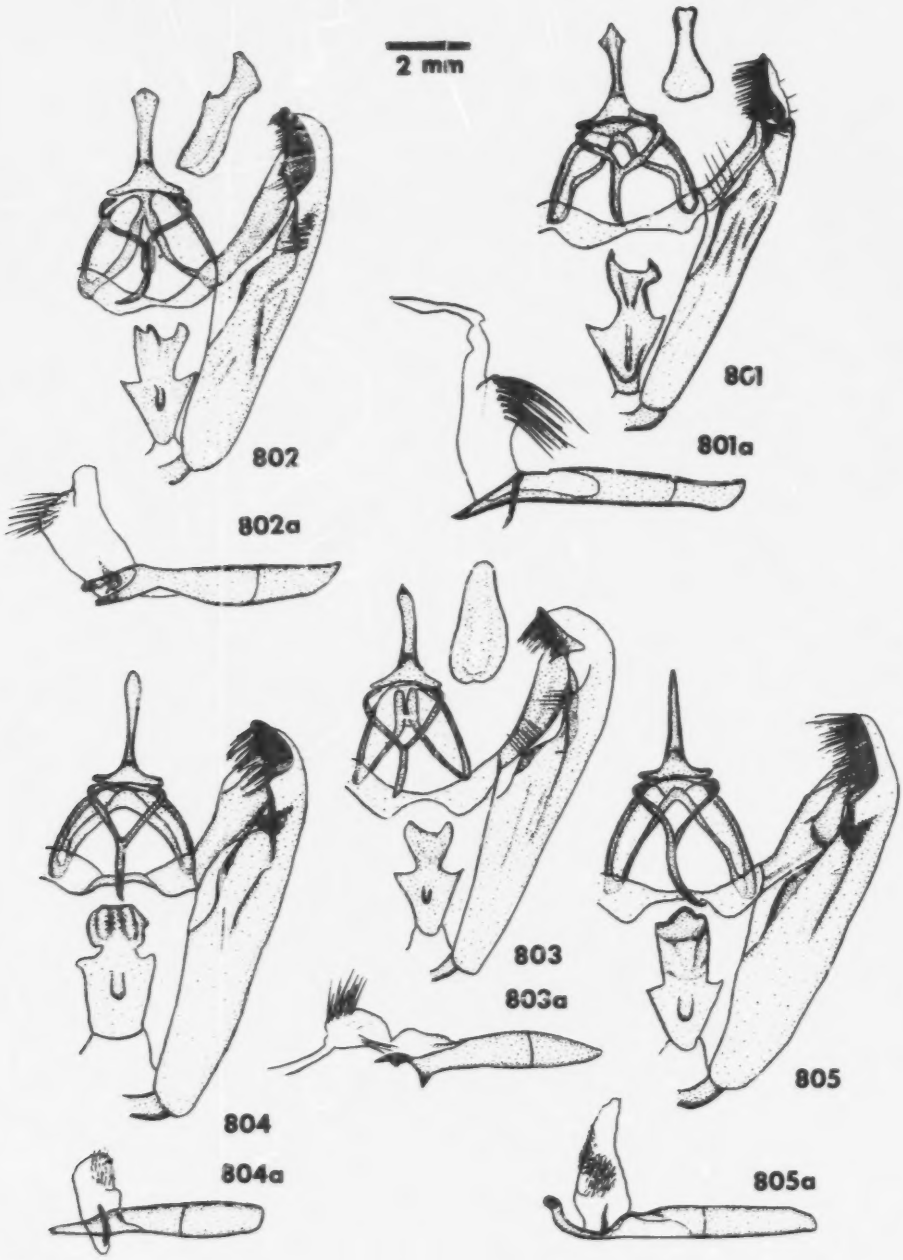

Figures 801-805.—Pero male genitalia: 801, heralda, Orosi, Cartago, Costa Rica, and 801a, aedeagus; 802, kayei, Hardware Gap, Jamaica, and 802a, aedeagus; 803, asterodia, Coatepec, Guerrero, Mexico, and 803a, aedeagus; 804, dularia, R. Cristal Mayu, Chapare, Bolivia, and 804a, aedeagus; 805, hoedularia, Pelotas, Rio Grande do Sul, Brazil, and 805a, aedeagus.

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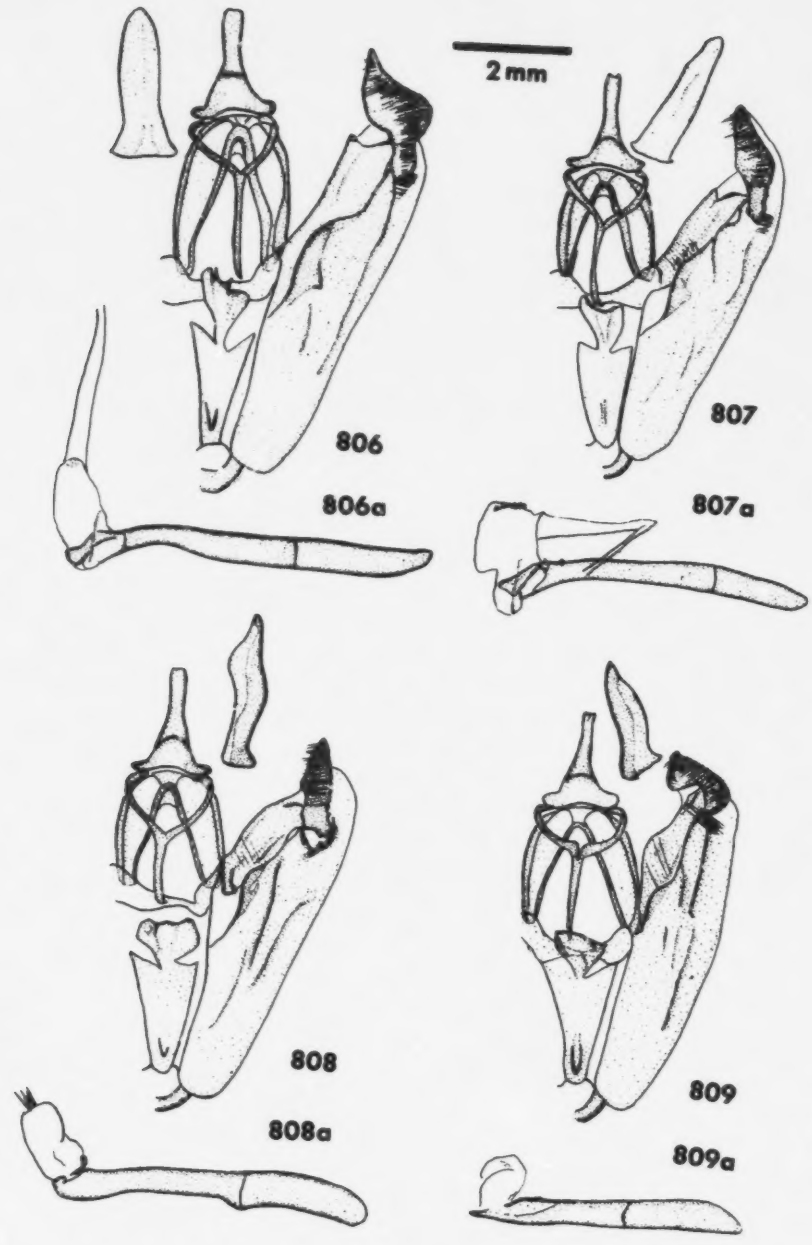

Figures 806-809.—Pero male genitalia: 806, spectrata, Loja, Loja, Ecuador, and 806a, aedeagus; 807, participa, Rio Songo, La Paz, Bolivia, and 807a, aedeagus; 808, lucena, R. Cristal Mayu, Chapare, Bolivia, and 808a, aedeagus; 809, latifascia, R. Cristal Mayu, Chapare, Bolivia, and 809a, aedeagus.

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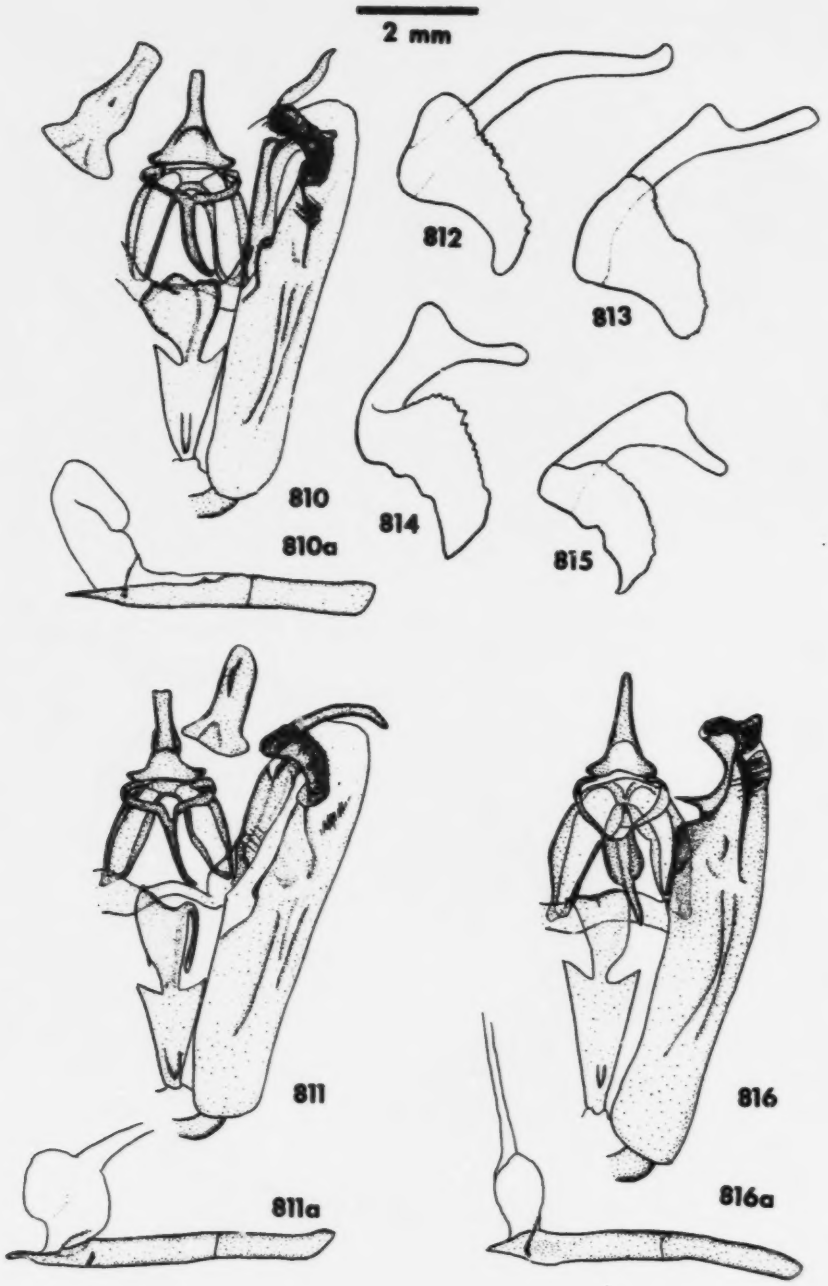

Figures 810-816.--Pero male genitalia: 810, sula, Huancabamba, Pasco, Peru, and 810a, aedeagus; 811, mathilda, Loja, Ecuador, and 811a, aedeagus, and 812, Incachaca, Cochabamba, Bolivia, costal fold, and 813, "Bolivia," costal fold, and 814, Pampaconas River, Peru, costal fold, and 815, Huacapistana, Junin, Peru, costal fold; 816, homodoxa, La Oroya, Puno, Peru, and 816a, aedeagus.

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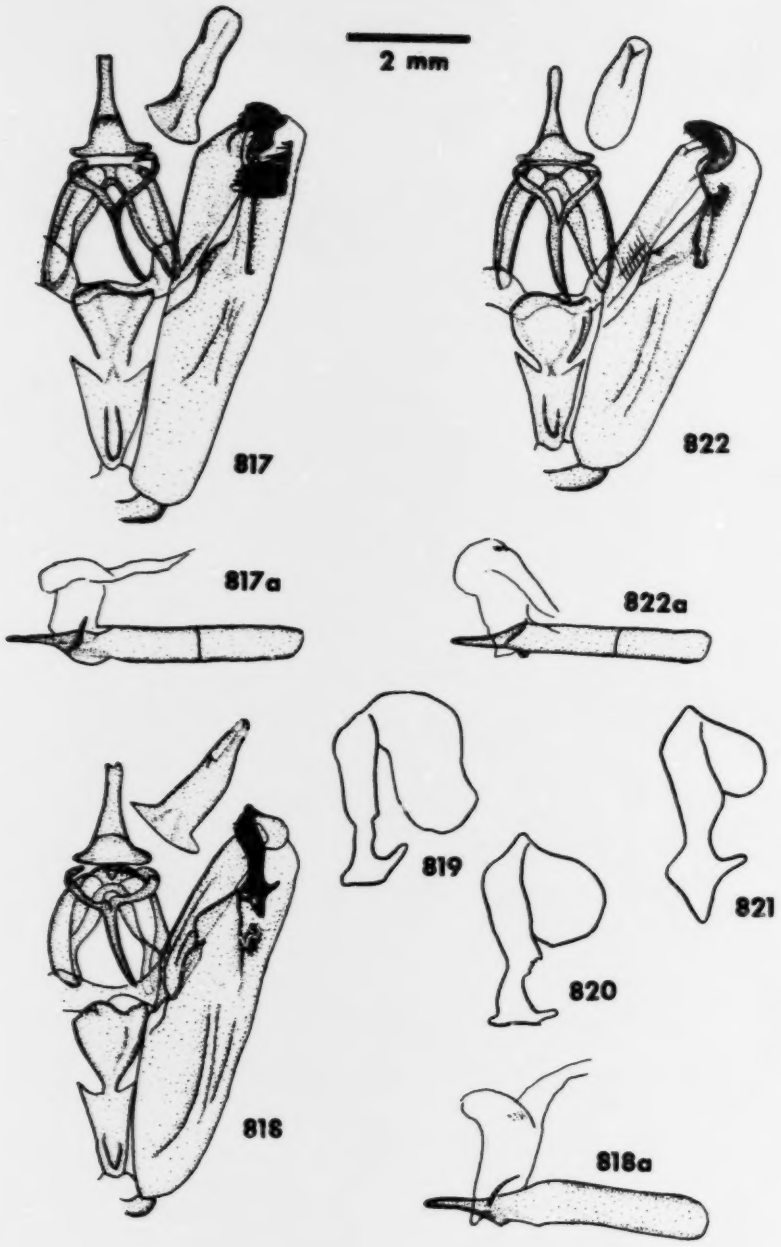

Figures 817-822.--Pero male genitalia: 817, semiusta, La Oroya, Puno, Peru, and 817a, aedeagus; 818, brynhilda, "Bolivia," and 818a, aedeagus, and 819, Huancabamba, Pasco, Peru, costal fold, and 820, Tinguri, Puno, Peru, costal fold, and 821, "Bolivia," costal fold; 822, hunaca, Quiroz, Peru, and 822a, aedeagus.

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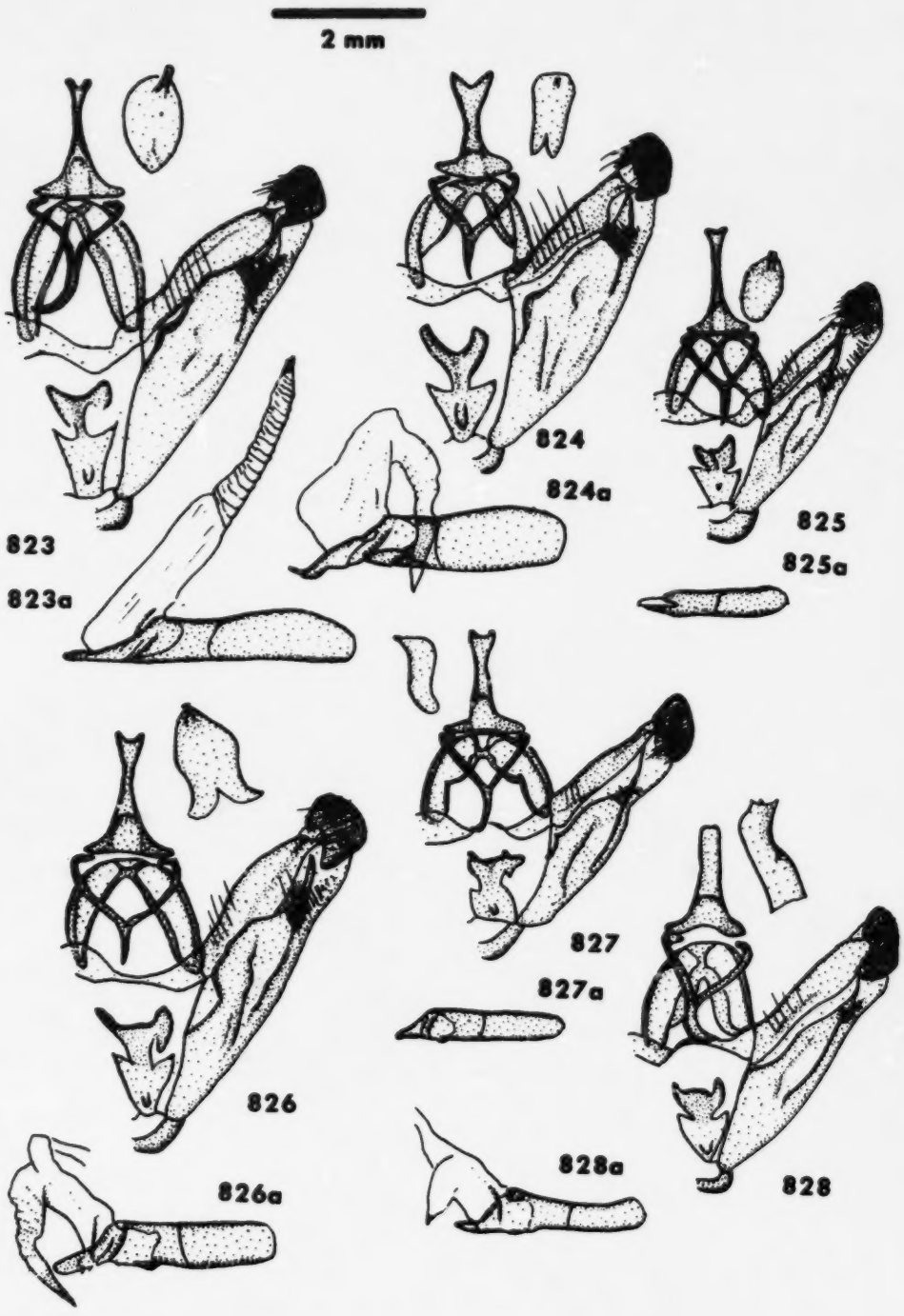

Figures 823-828.—Pero male genitalia: 823, cocha, "Bolivia," and 823a, aedeagus; 824, inca, Cochabamba, Bolivia, and 824a, aedeagus; 825, neuquena, Neuquen, Argentina, and 825a, aedeagus; 826, jonesaria, Castro, Paraná, Brazil, and 826a, aedeagus; 827, minopenaria, Estancia do Tigre, Rio Grande do Sul, Brazil, and 827a, aedeagus; 828, acopa, Tambomachay, Cusco, Peru, and 828a, aedeagus.

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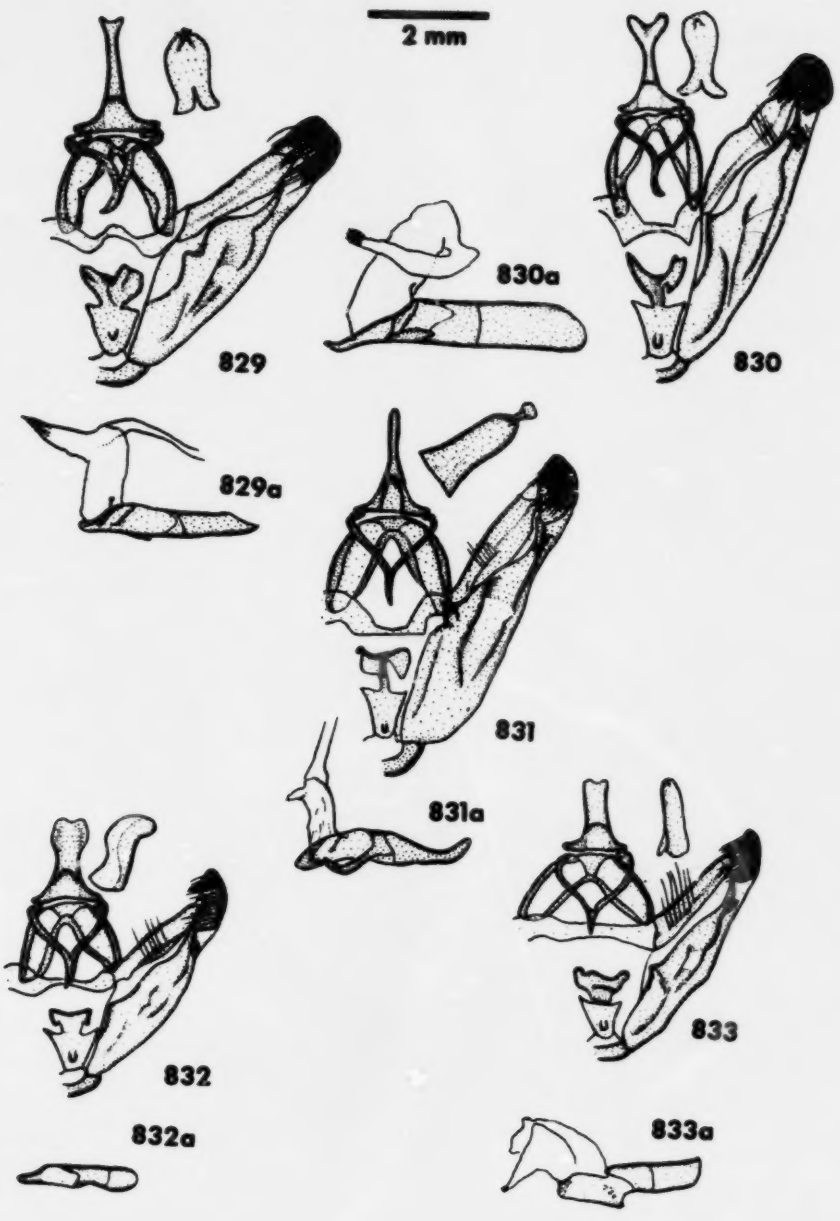

Figures 829-833.--Pero male genitalia: 829, scotica, Casupa, Florida, Uruguay, and 829a, aedeagus; 830, curia, Pelotas, Rio Grande do Sul, Brazil, and 830a, aedeagus; 831, castraria, Castro, Paraná, Brazil, and 831a, aedeagus; 832, ochriplaga, Lima-Matucana, Peru, and 832a, aedeagus; 833, geminipuncta, Huancabamba, Pasco, Peru, and 833a, aedeagus.

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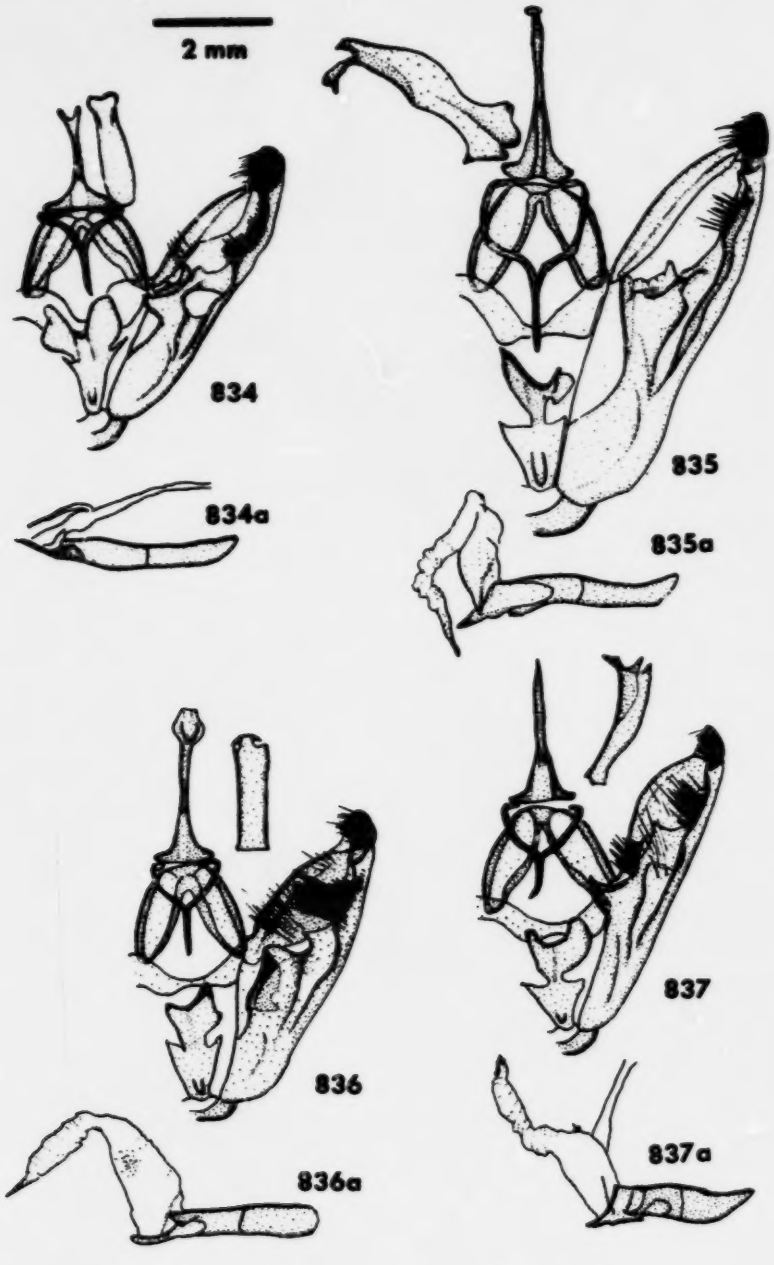

Figures 834-837.--Pero male genitalia: 834, obtusaria, Callao, Lima, Peru, and 834a, aedeagus; 835, consimilis, Lima, Lima, Peru, and 835a, aedeagus; 836, galea, Huigra, Chimborazo, Ecuador, and 836a, aedeagus; 837, erubescens, Angasmarca, Peru, and 837a, aedeagus.

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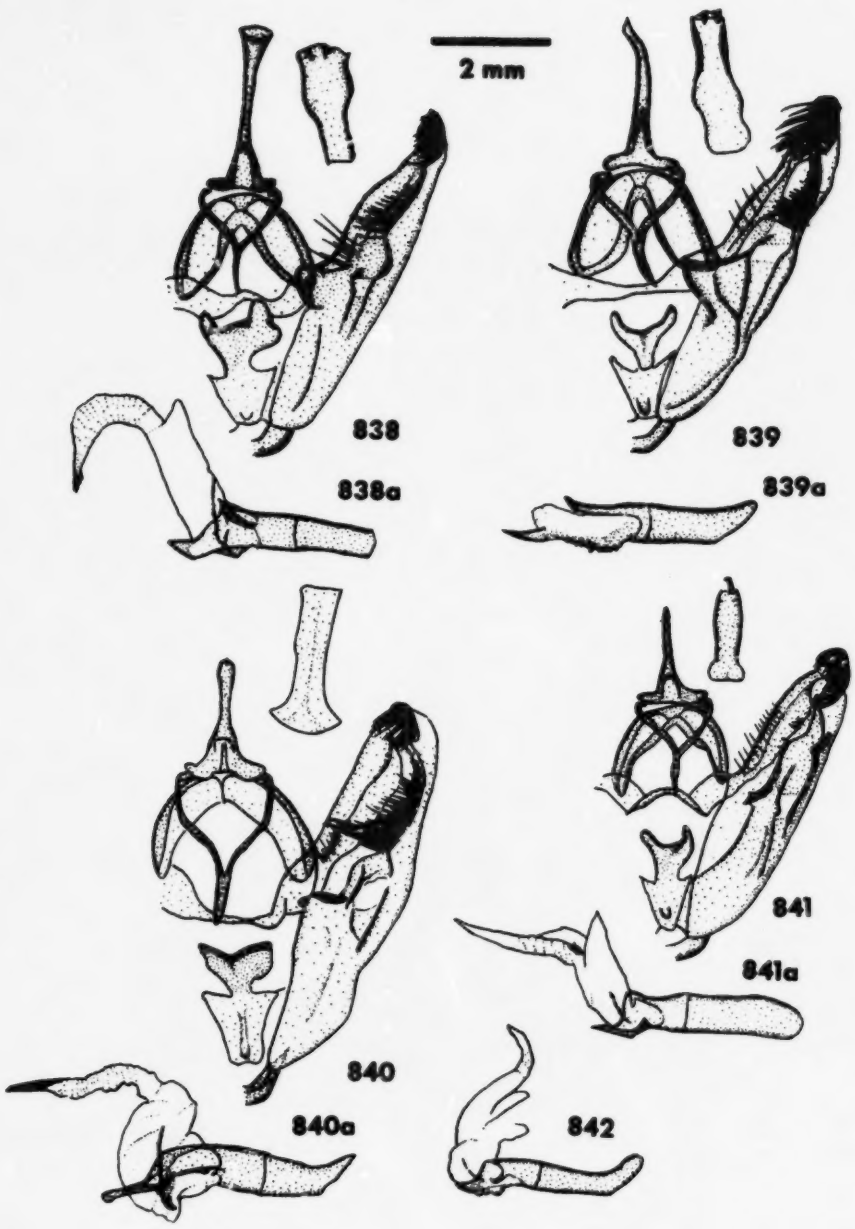

Figures 838-842.—Pero male genitalia: 838, matucana, Matucana, Peru, and 838a, aedeagus; 839, cinnamomina, Lima-Matucana, Peru, and 839a, aedeagus; 840, atridisca, Angasmarca, Peru, and 840a, aedeagus; 841, corda, Pacho, Cundinamarca, Colombia, and 841a, aedeagus; 842, cola, "Colombie," aedeagus.

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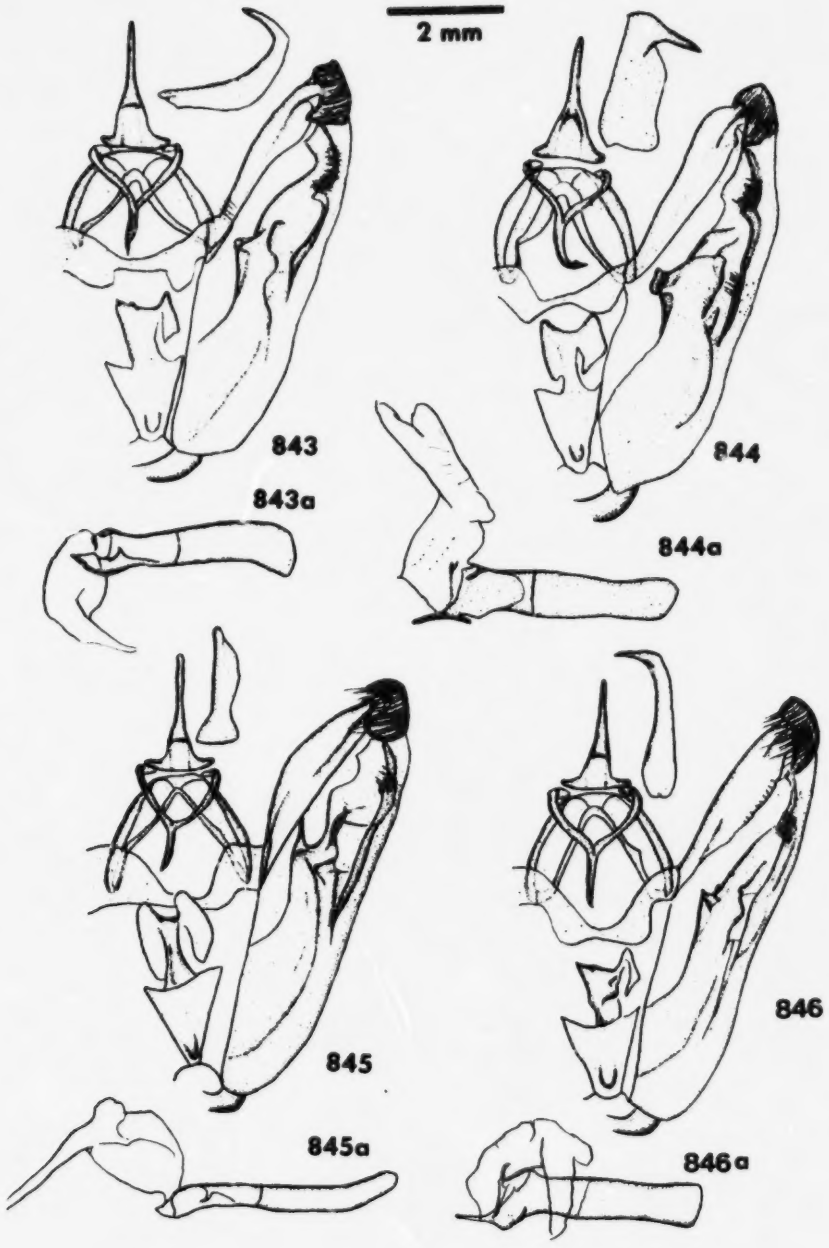

Figures 843-846.—Pero male genitalia: 843, barbarata, Santa Barbara, Ecuador, and 843a, aedeagus; 844, angasmarca, Angasmarca, Peru, and 844a, aedeagus; 845, torna, Torne, Tolima, Colombia, and 845a, aedeagus; 846, tabacona, River Tabaconas, Peru, and 846a, aedeagus.

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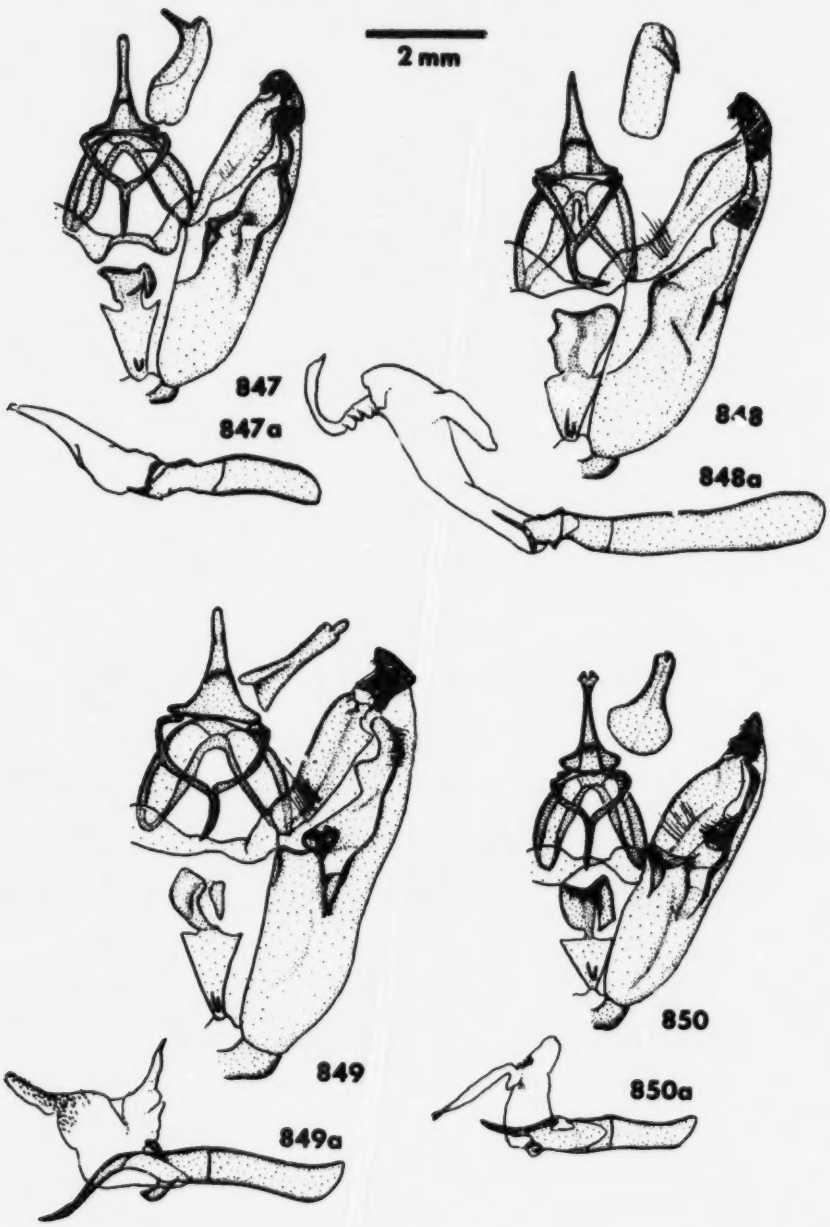

Figures 847-850.—Pero male genitalia: 847, rata, Trujillo, Peru, and 847a, aedeagus; 848, gota, Bogotá, Cundinamarca, Colombia, and 848a, aedeagus; 849, gamuza, El Monje, Loja, Ecuador, and 849a, aedeagus; 850, sinalba, Huacapistana, Junin, Peru, and 850a, aedeagus.

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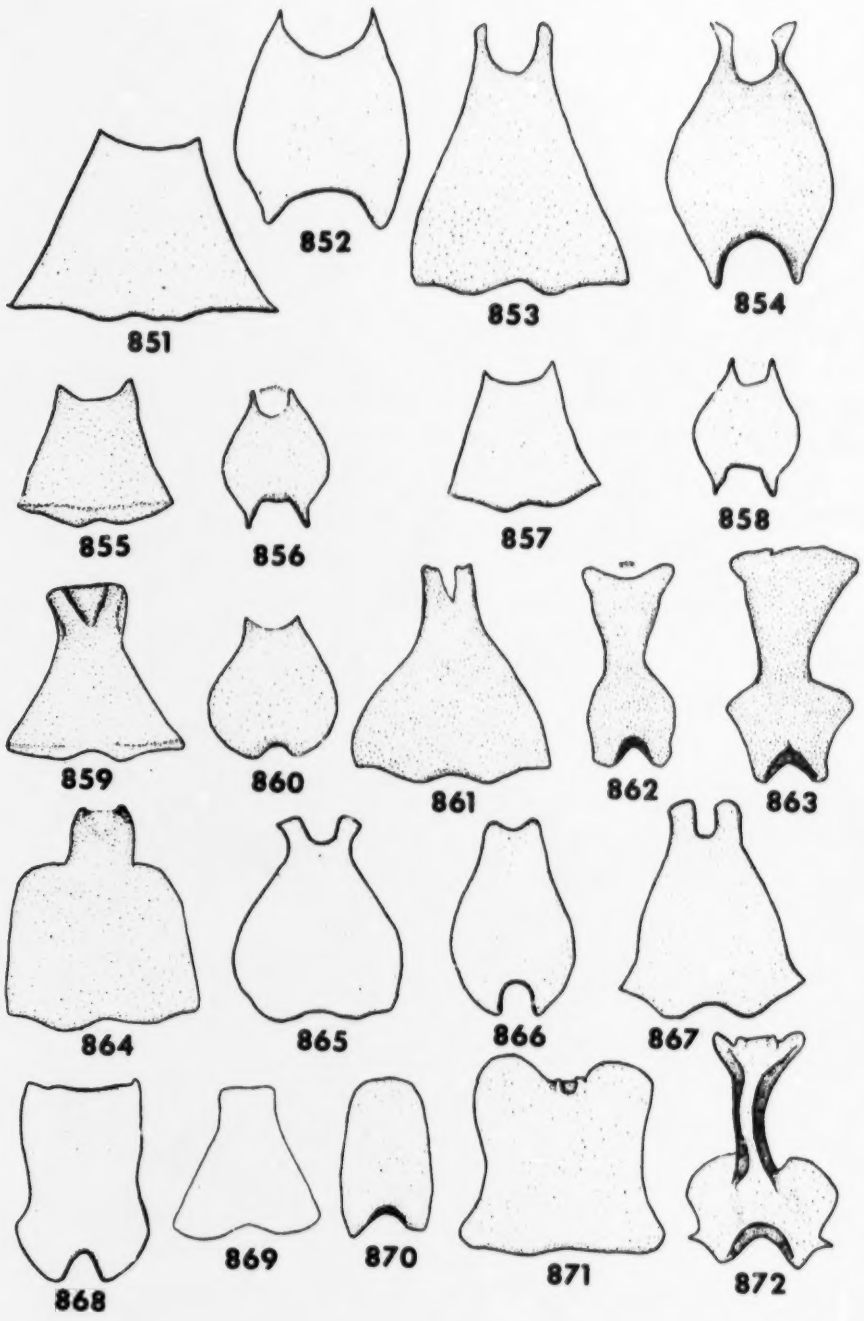

Figures 851-872.—Pero male genitalia: 851, obtusaria, Callao, Peru, eighth tergite, and 852, eighth sternite; 853, consimilis, Huacapistana, Junin, Peru, eighth tergite, and 854, eighth sternite; 855, matucana, Verrugas, Lima, Peru, eighth tergite, and 856, eighth sternite; 857, erubescens, Angasmarca, Peru, eighth tergite, and 858, eighth sternite; 859, atridisca, Angasmarca, Peru, eighth tergite, and 860, eighth sternite; 861, barbarata, Santa Barbara, Ecuador, eighth tergite, and 862, eighth sternite; 863, angasmarca, Angasmarca, Peru, eighth sternite, and 864, eighth tergite; 865, torna, Torne, Tolima, Colombia, eighth tergite, and 866, eighth sternite; 867, tabacona, Tabaconas River, Peru, eighth tergite, and 868, eighth sternite; 869, rata, Trujillo, Peru, eighth tergite, and 870, eighth sternite; 871, gota, Bogotá, Cundinamarca, Colombia, eighth tergite, and 872, eighth sternite.

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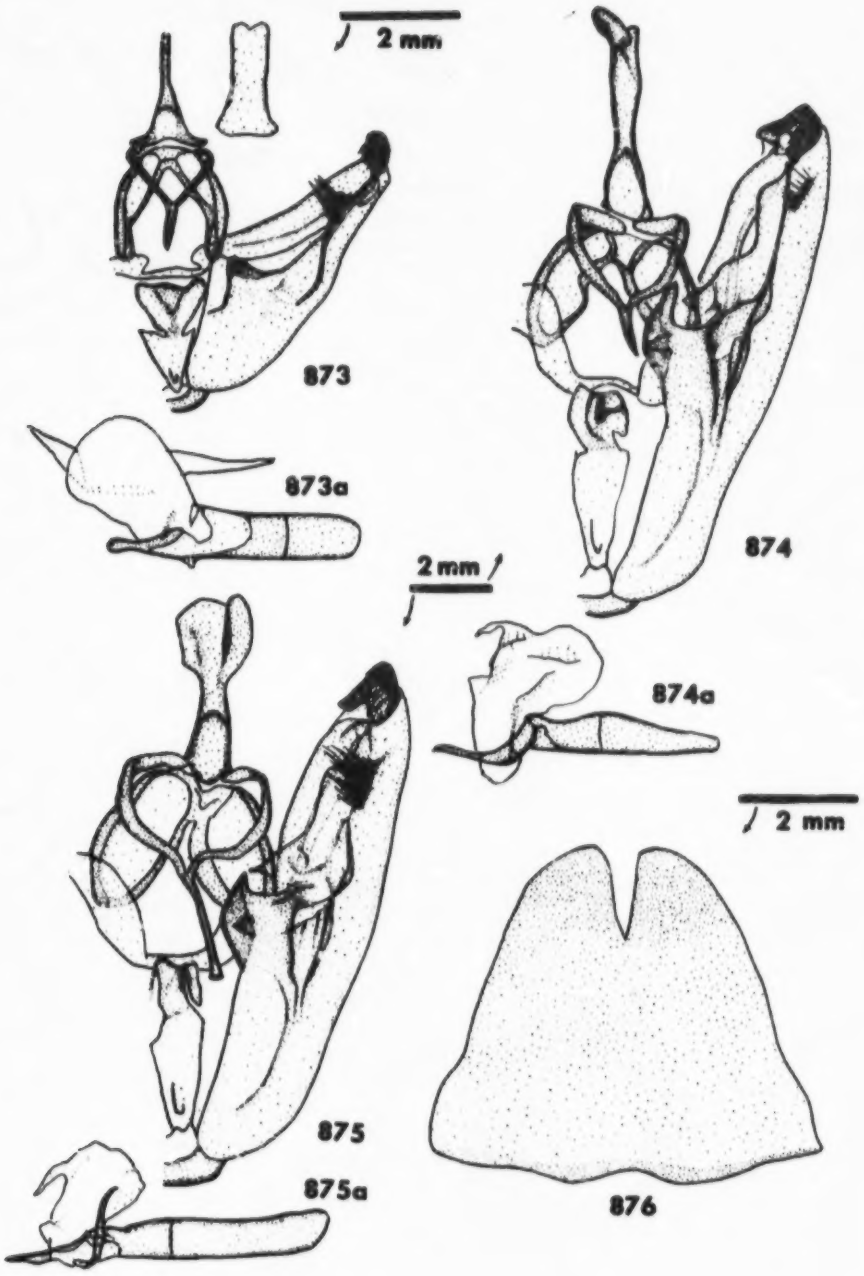

Figures 873–876.—Pero male genitalia: 873, vulpecula, "Peru," and 873a, aedeagus; 874, lara, Mérida, Venezuela, and 874a, aedeagus; 875, variaria, Hardware Gap, Jamaica, and 875a, aedeagus; 876, gamuza, El Monje, Loja, Ecuador, eighth tergite.

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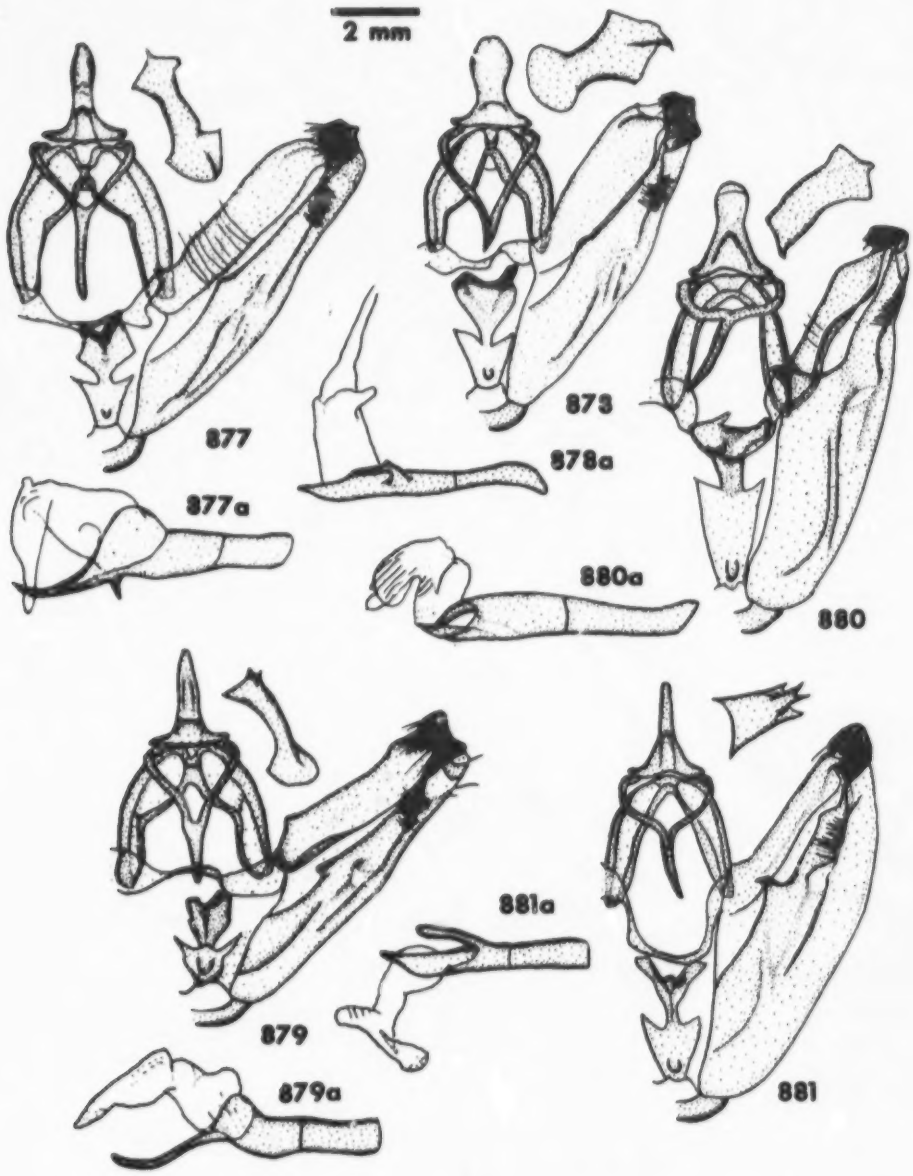

Figures 877-881.—Pero male genitalia: 877, beatricaria, Huancabamba, Pasco, Peru, and 877a, aedeagus; 878, pincha, Loja, Ecuador, and 878a, aedeagus; 879, tricaria, La Oroya, Puno, Peru, and 879a, aedeagus; 880, spongiata, Pumayaca, Peru, and 880a, aedeagus; 881, longisecta, "St. Catherines," Brazil, and 881a, aedeagus.

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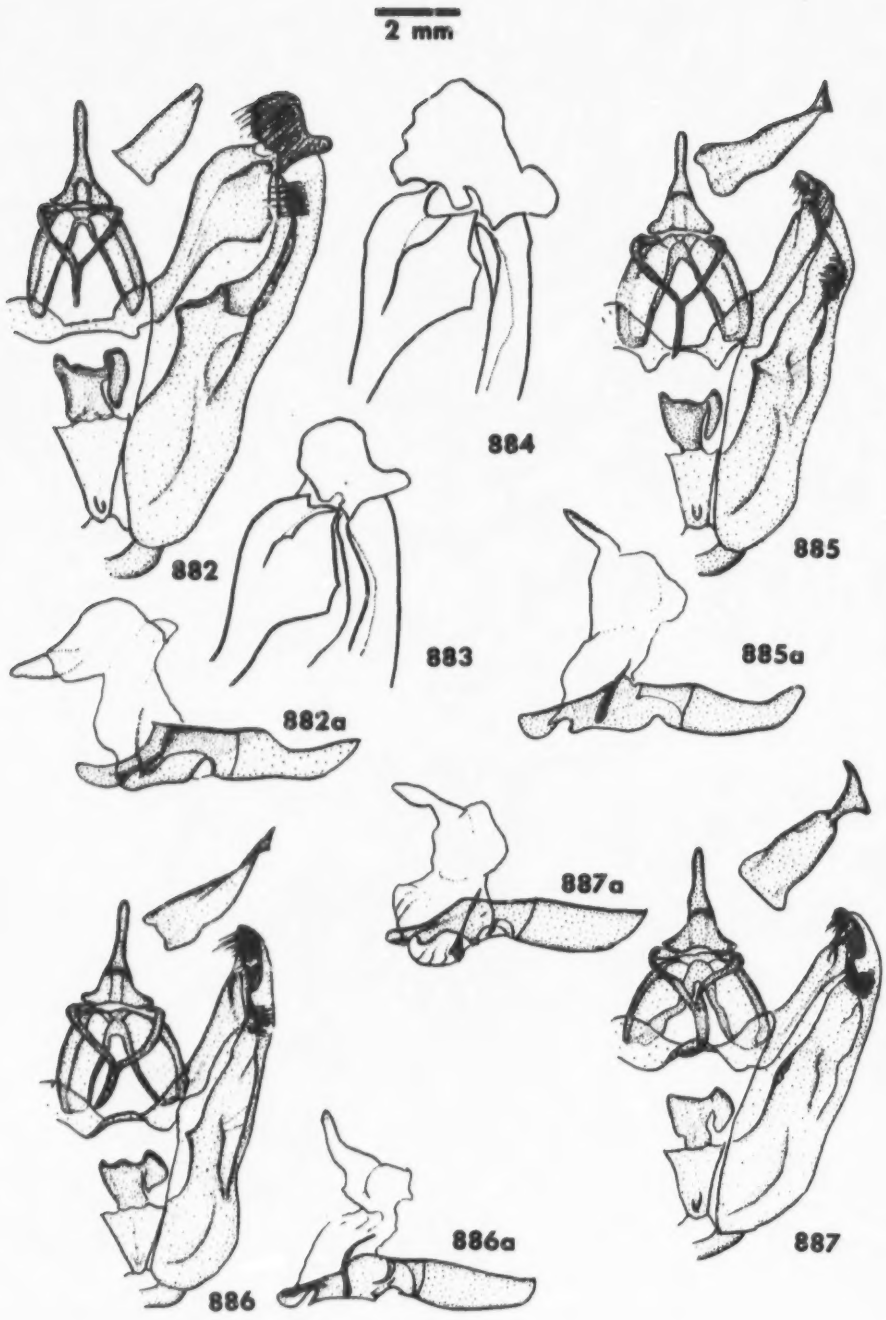

Figures 882-887.--Pero male genitalia: 882, fortunata, Loja, Ecuador, and 882a, aedeagus, and 883, tip of right valve, and 884, "Colombie," tip of right valve; 885, unfortunata, Incachaca, Cochabamba, Bolivia, and 885a, aedeagus; 886, angulosa, Aguaiani, Puno, Peru, and 886a, aedeagus; 887, subangulosa, Incachaca, Cochabamba, Bolivia, and 887a, aedeagus.

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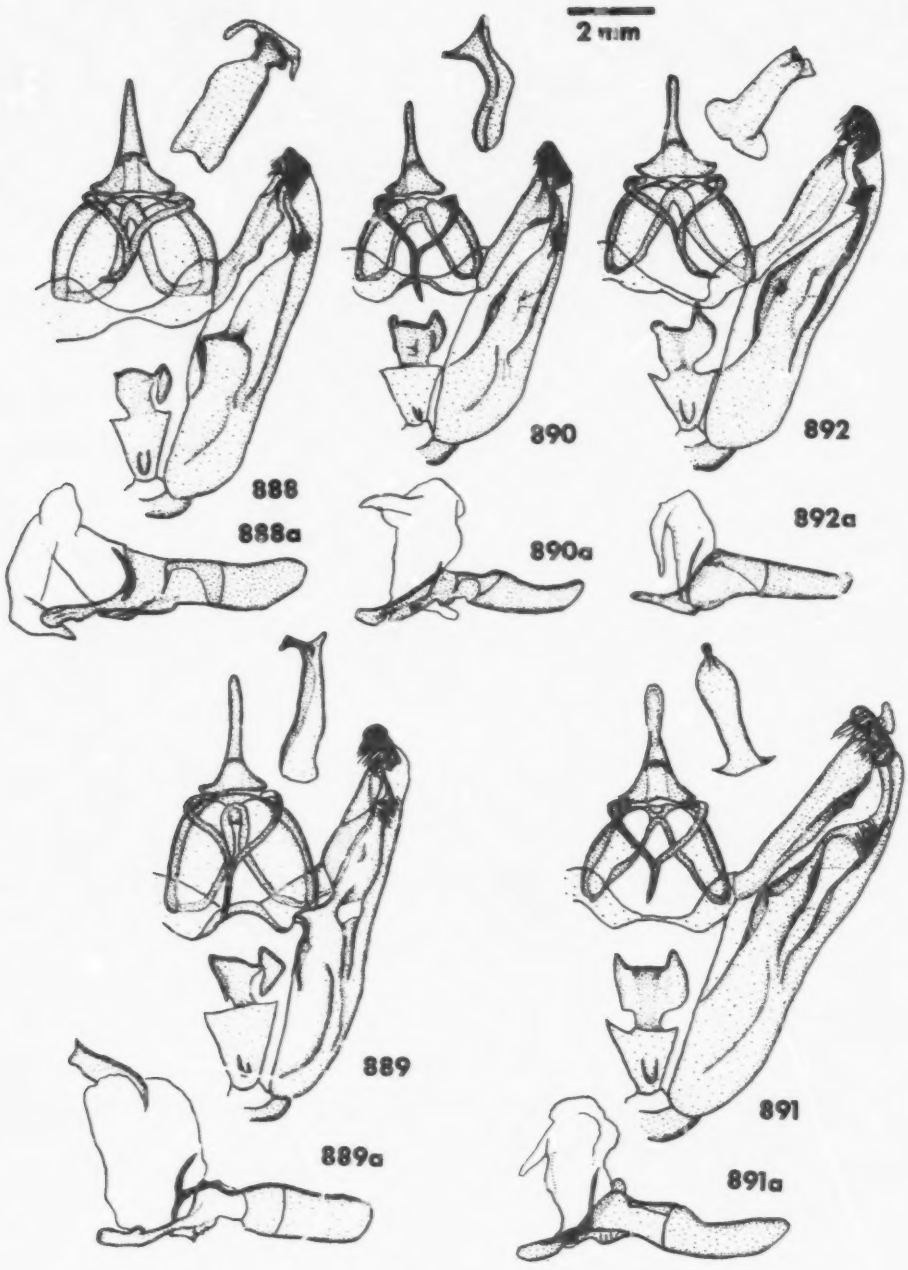

Figures 888-892.--Pero male genitalia: 888, converga, Incachaca, Cochabamba, Bolivia, and 888a, aedeagus; 889, tolima, Monte Tolima, Tolima, Colombia, and 889a, aedeagus; 890, alticola, Oconeque, Puno, Peru, and 890a, aedeagus; 891, messidora, Oconeque, Puno, Peru, and 891a, aedeagus; 892, crepera, Monte Socorro, Tolima, Colombia, and 892a, aedeagus.

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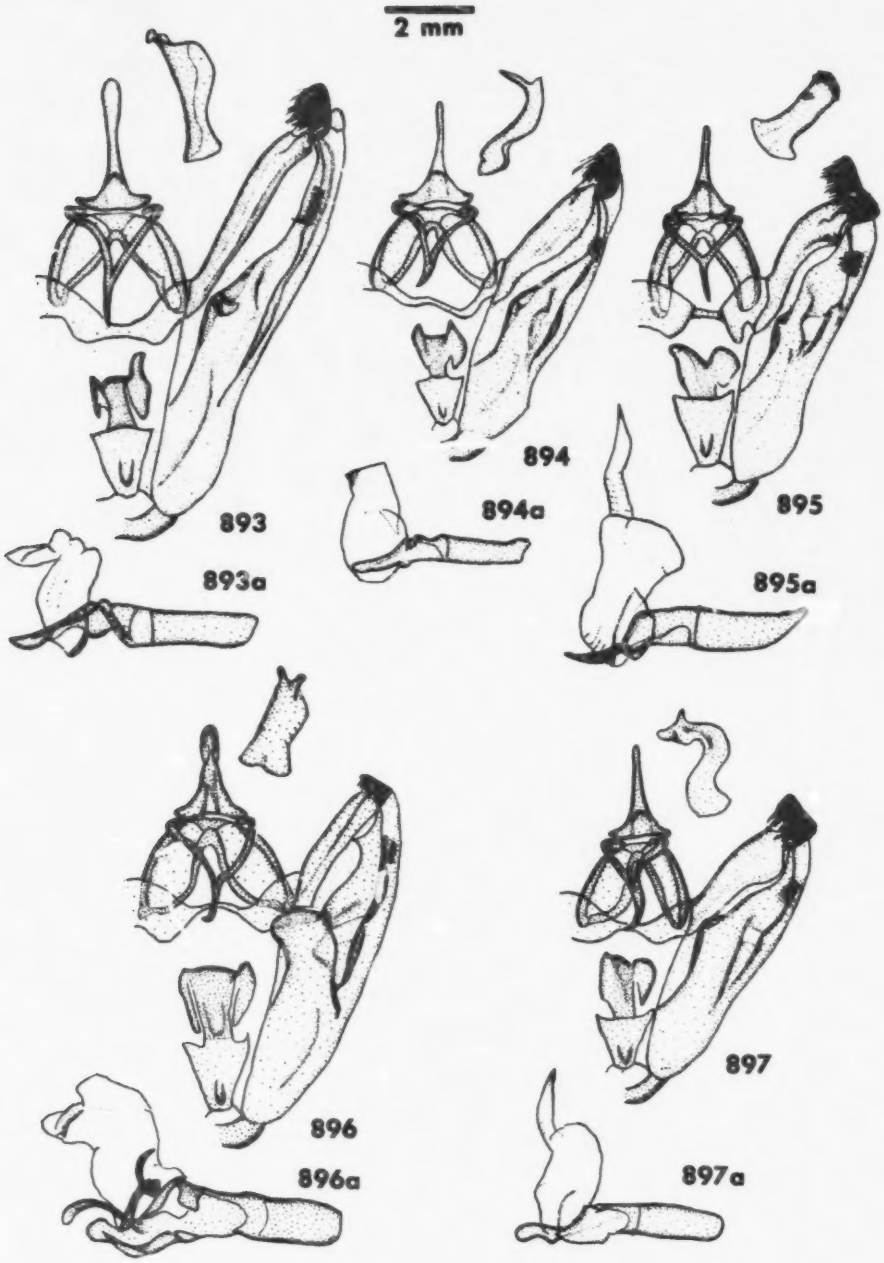

Figures 893-897.--Pero male genitalia: 893, fraterna, Pozuzo, Huánuco, Peru, and 893a, aedeagus; 894, scitaria, Pozuzo, Huánuco, Peru, and 894a, aedeagus; 895, elmonjensis, El Monje, Loja, Ecuador, and 895a, aedeagus; 896, lepa, Monte Tolima, Tolima, Colombia, and 896a, aedeagus; 897, lusa, Tucumán, Argentina, and 897a, aedeagus.

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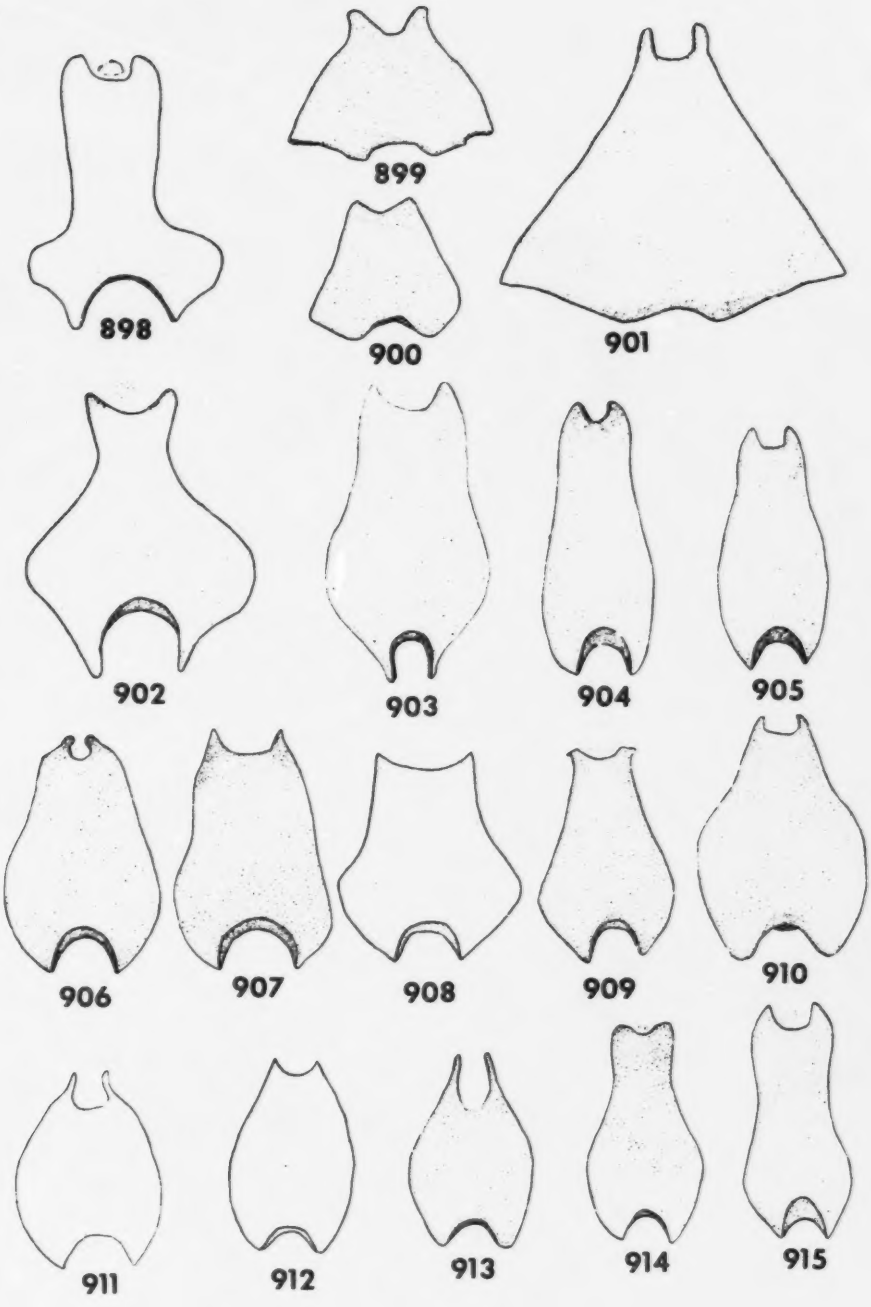

Figures 898-915.—Pero male genitalia: 898, gamuza, El Monje, Loja, Ecuador, eighth sternite; 899, vulpecula, "Peru," eighth tergite, and 900, eighth sternite; 901, variaria, Hardware Gap, Jamaica, eighth tergite, and 902, eighth sternite; 903, fortunata, Pampaconas River, Peru, eighth sternite; 904, unfortunata, Incachaca, Cochabamba, Bolivia, eighth sternite; 905, angulosa, Agualani, Puno, Peru, eighth sternite; 906, subangulosa, Incachaca, Cochabamba, Bolivia, eighth sternite; 907, converga, Incachaca, Cochabamba, Bolivia, eighth sternite; 908, tolima, Monte Tolima, Tolima, Colombia, eighth sternite; 909, alticola, Tinguri, Puno, Peru, eighth sternite; 910, messidora, "Bolivia," eighth sternite; 911, fraterna, Tozuzo, Huánuco, Peru, eighth sternite; 912, crepera, Monte Socorro, Tolima, Colombia, eighth sternite; 913, scitaria, Loja, Ecuador, eighth sternite; 914, elmonjensis, El Monje, Loja, Ecuador, eighth sternite; 915, lepa, Monte Tolima, Tolima, Colombia, eighth sternite.

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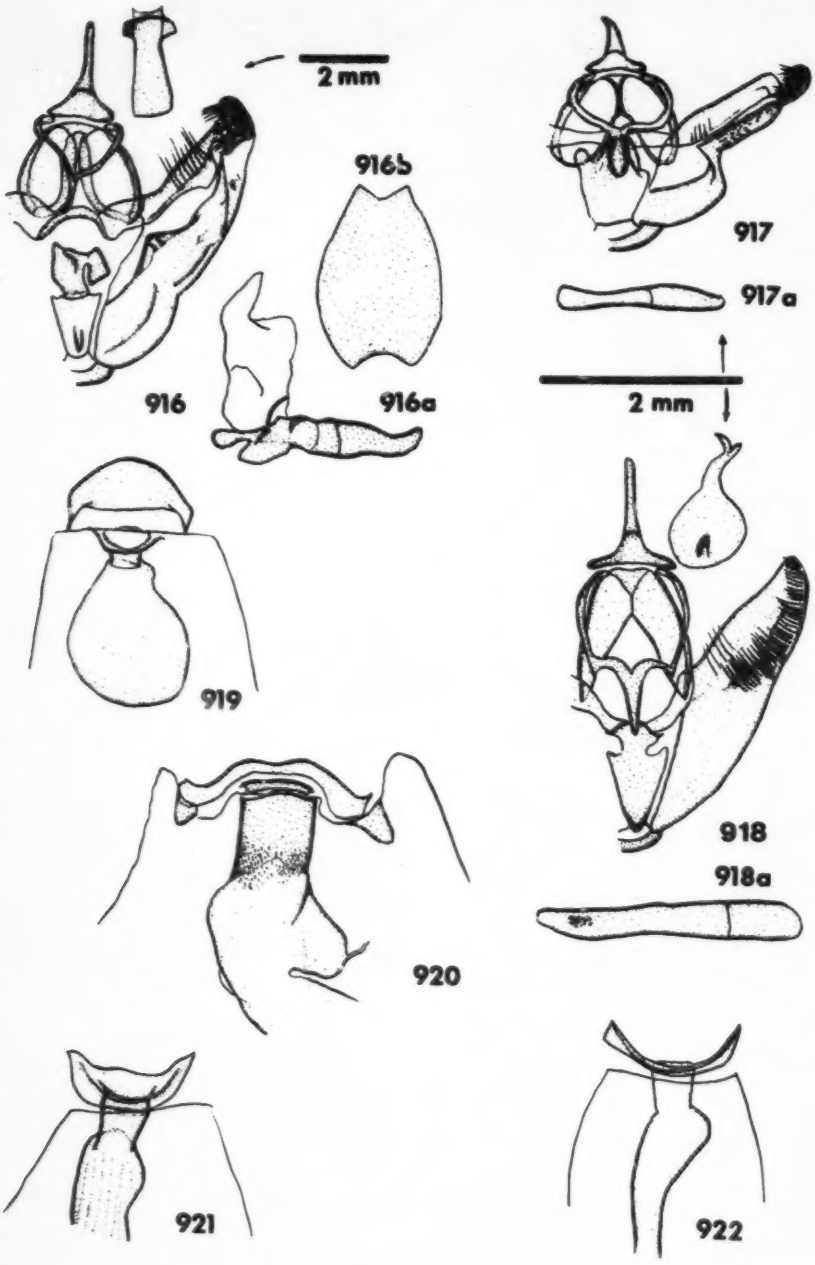

Figures 916-922.--Pero male and female genitalia: 916, boneta, Huancabamba, Pasco, Peru, and 916a, aedeagus, and 916b, eighth sternite; 917, derga, "Rio," Brazil, and 917a, aedeagus; 918, perioda, São Paulo, Brazil, and 918a, aedeagus; 919, meskaria, Kingsville, Texas; 920, astapa, "San Salvador"; 921, radiosaria, Orizaba, Veracruz, Mexico; 922, inviolata, San Andreas Canyon, California.

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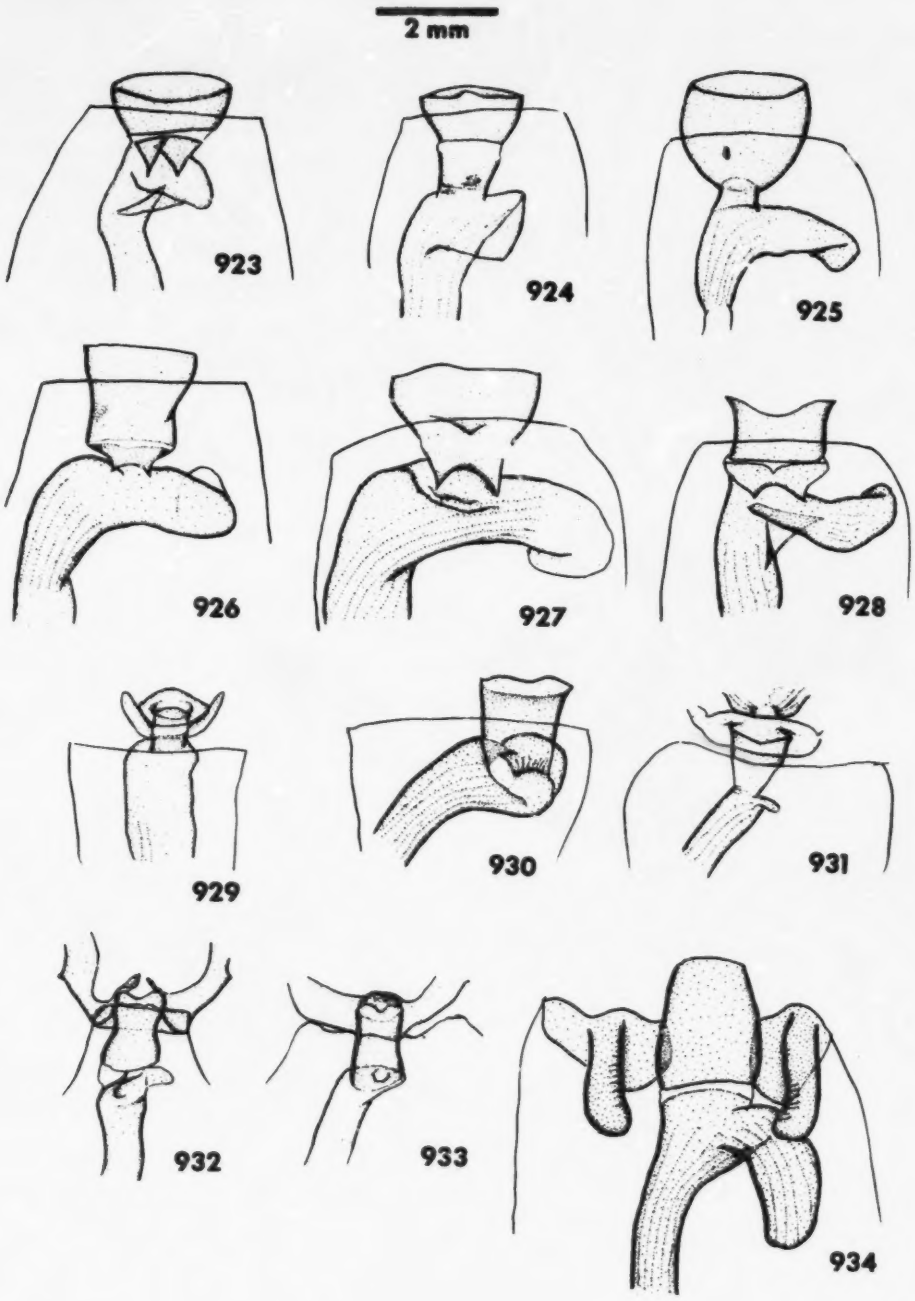

Figures 923-934.--Pero female genitalia: 923, aurunca, Cayuga, Izabal, Guatemala; 924, punta, Jalapa, Veracruz, Mexico; 925, uniformis, Pelotas, Rio Grande do Sul, Brazil; 926, lignata, Cayenne, French Guiana; 927, afuera, Chejel, Alta Verapaz, Guatemala; 928, obscurior, San Eduardo, Ecuador; 929, zalissaria, "Florida"; 930, flavisaria, Yavapai Co., Arizona; 931, nyctopa, Rio Grande, British Honduras; 932, pelota, Pelotas, Rio Grande do Sul, Brazil; 933, sprata, Tucumán, Argentina; 934, chapela, St. Laurent, Maroni, French Guiana.

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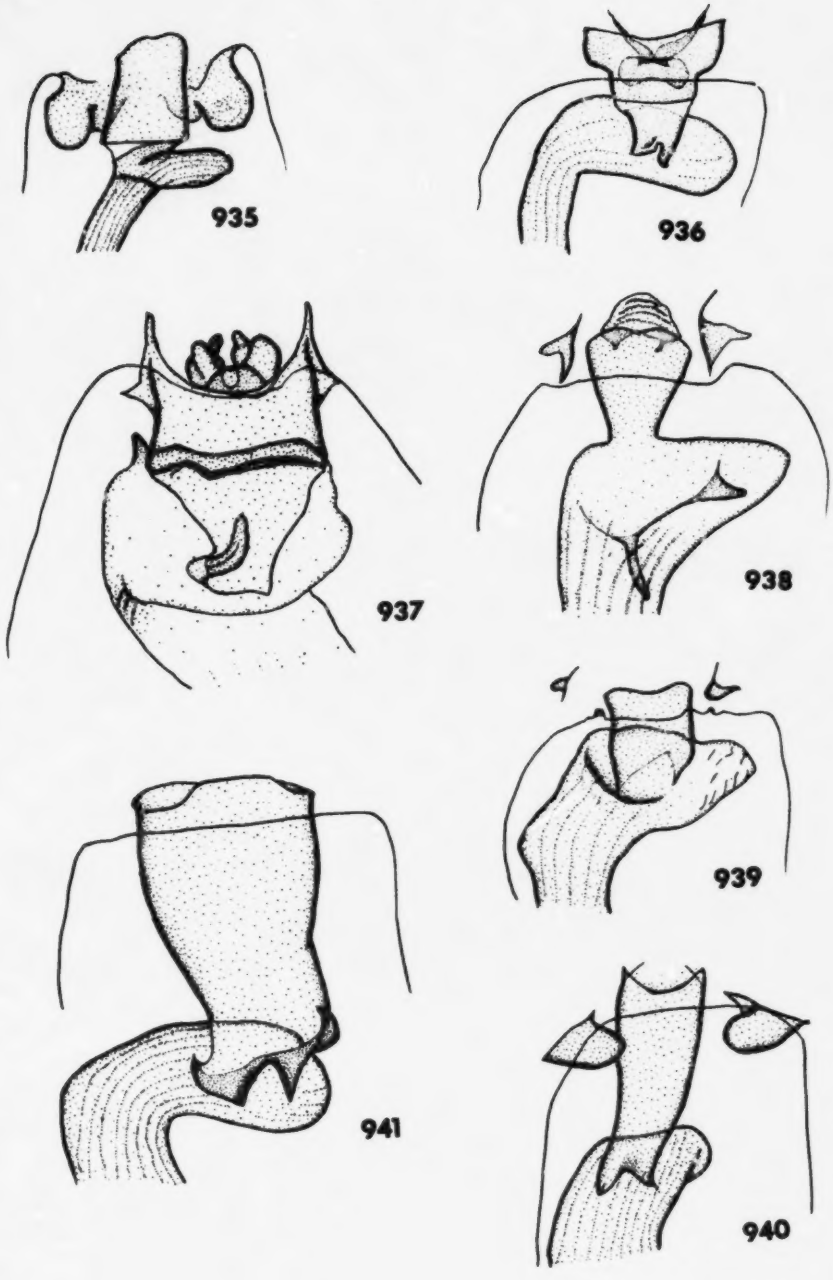

Figures 935-941.—Pero female genitalia: 935, nigra, "Mexico"; 936, disjuncta, St. Jean, Maroni, French Guiana; 937, mathanaria, Ponte Boa, Amazonas, Brazil; 938, stuposaria, Cayuga, Izabal, Guatemala; 939, immundaria, São Paulo, Brazil; 940, protea, Barro Colorado Island, Panama; 941, exquisita, "Peru."

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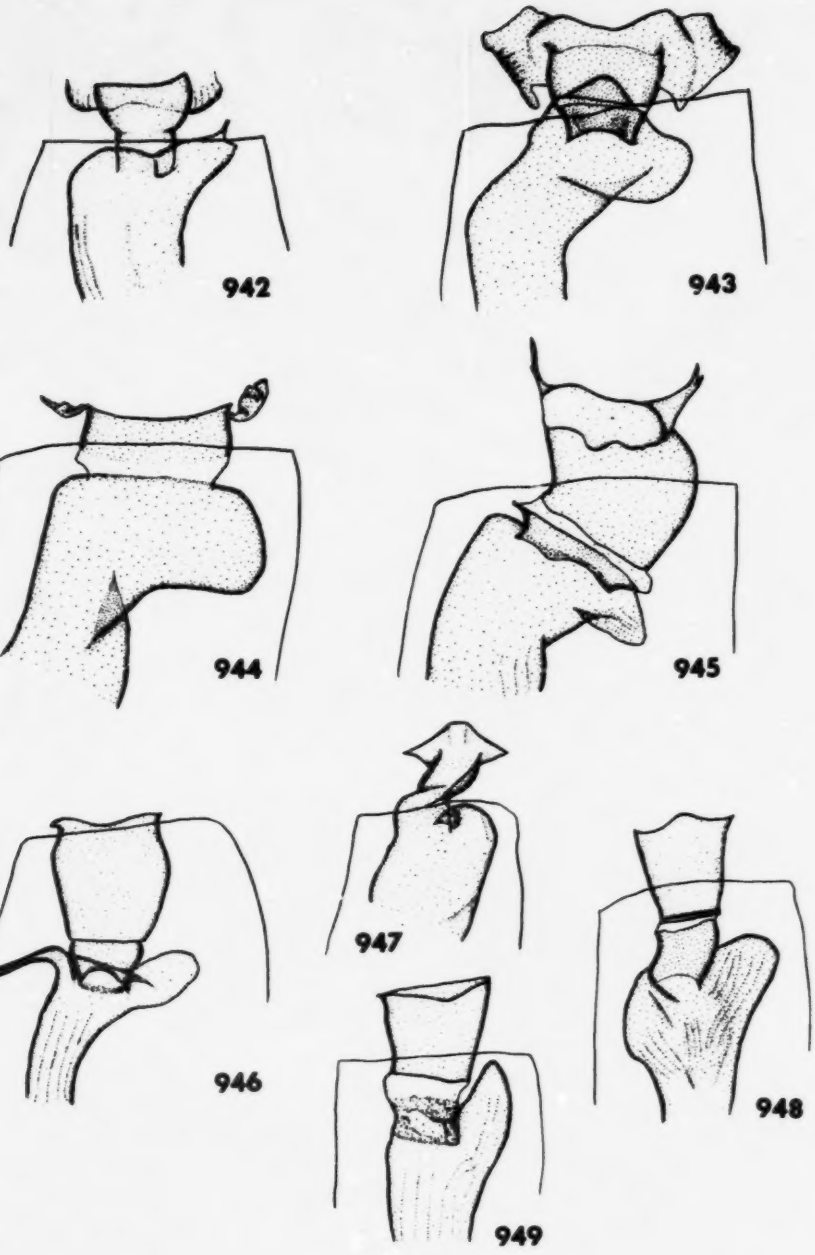

Figures 942-949.--Pero female genitalia: 942, foeda, Maroni River, French Guiana; 943, mephistola, Sapucay, Paraguarí, Paraguay; 944, duida, Mt. Duida, Amazonas, Venezuela; 945, semibrunnea, Gelderaland, Surinam; 946, plenilunata, Yunga del Espíritu Santo, Cochabamba, Bolivia; 947, lustraria, "St. Catherines," Brazil; 948, pinsa, Rancho Grande, Aragua, Venezuela; 949, boa, San Esteban Valley, Carabobo, Venezuela.

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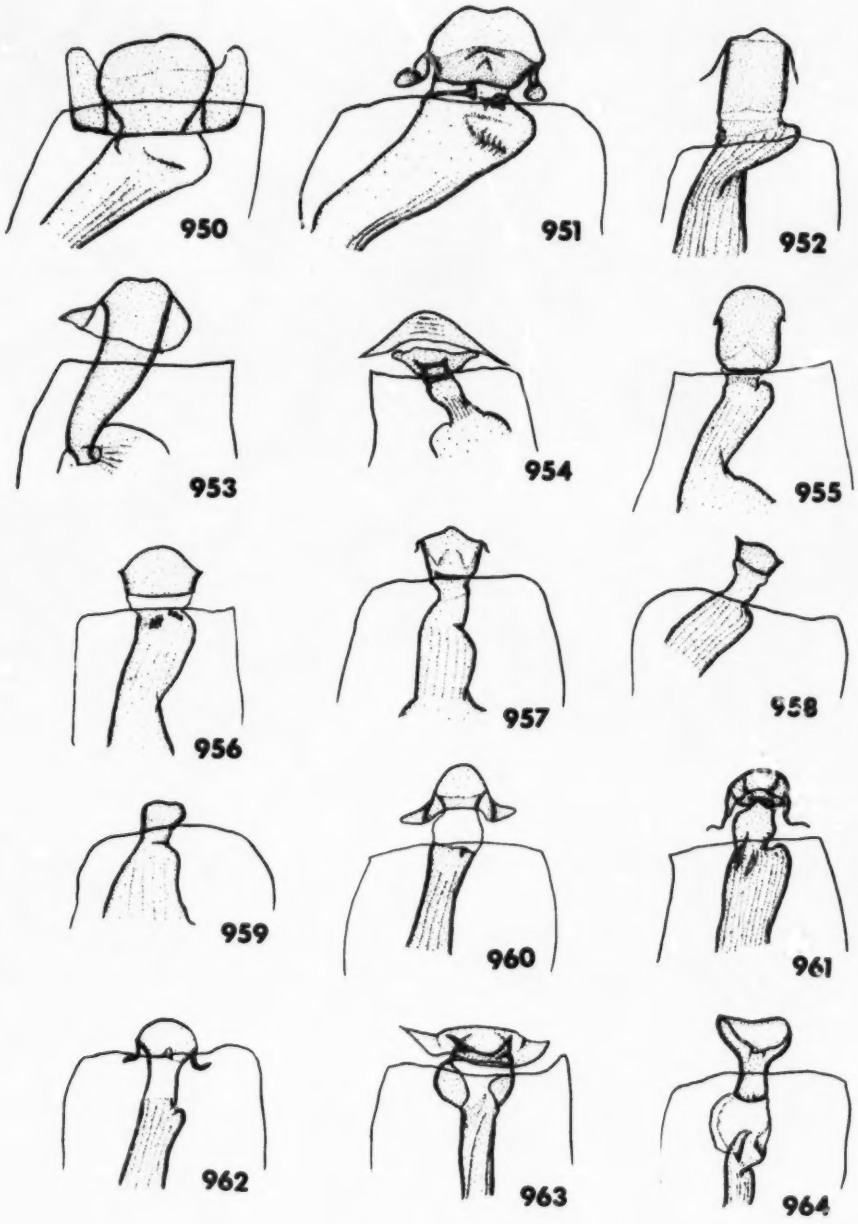

Figures 950-964.—Pero female genitalia: 950, juna, Santo Domingo, Puno, Peru; 951, pulverosa, São Paulo, Brazil; 952, rapinaria, Petropolis, Rio de Janeiro, Brazil; 953, hoffmanni, Hansa Humboldt, Santa Catarina, Brazil; 954, ligera, Castro, Paraná, Brazil; 955, castanea, "Bolivia"; 956, seniasaria, São Paulo, Brazil; 957, externa, Barro Colorado Island, Panama; 958, clysiaria, La Chorrera, Panama; 959, loca, Cebas, Amazonas, Peru; 960, circumflexata, Rancho Grande, Aragua, Venezuela; 961, juruana, St. Laurent, Maroni, French Guiana; 962, dorsipunctata, Cayuga, Izabal, Guatemala; 963, fragila, Banana River, Costa Rica; 964, incisa, Tuis, Cartago, Costa Rica.

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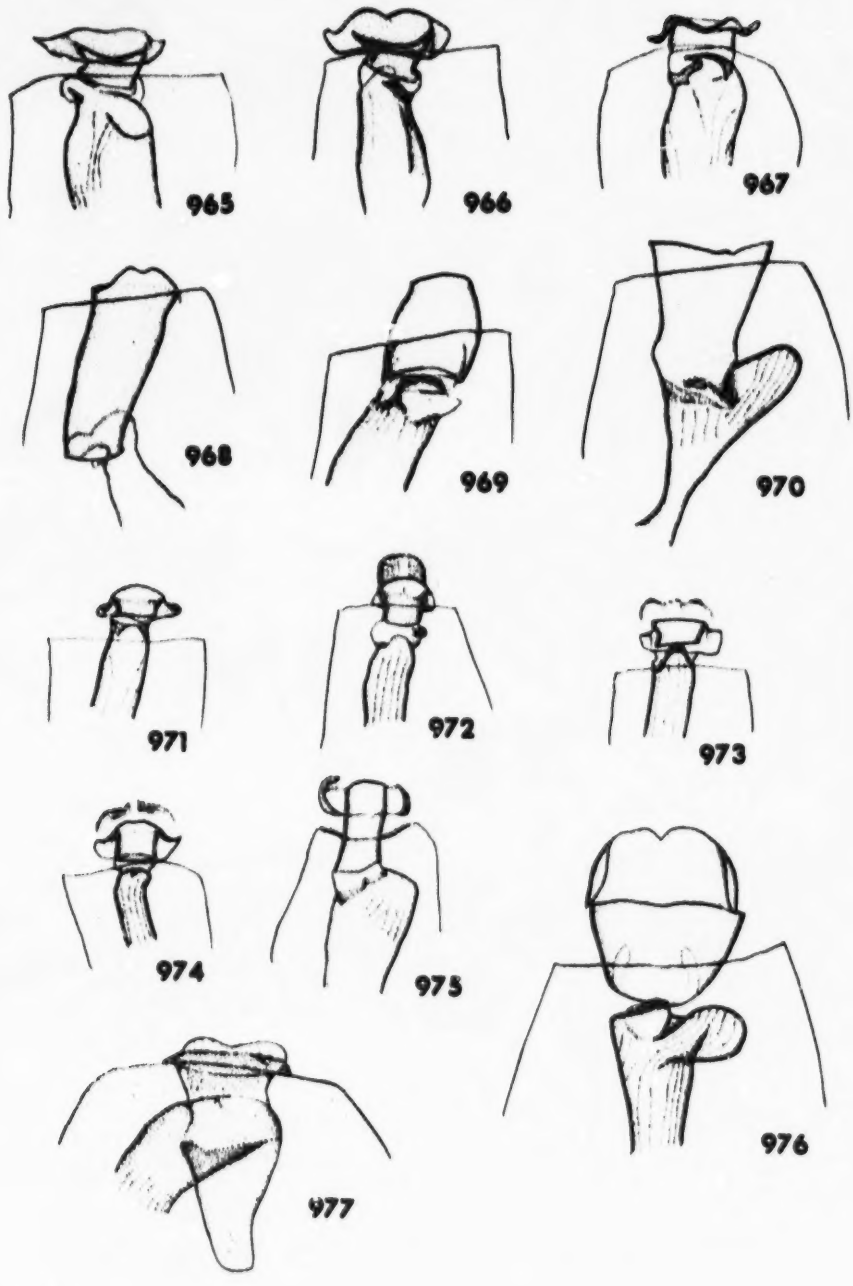

Figures 965-977.--Pero female genitalia: 965, rumina, Aroa, Yaracuy, Venezuela; 966, maca, Santa Isabel, Azuay, Ecuador; 967, infantilis, Aroa, Yaracuy, Venezuela; 968, steinbachi, Tapera, Brazil; 969, bicurvata, Tucumán, Argentina; 970, binasta, Rio Maranon, Peru; 971, nerisaria, Santiago, Cuba; 972, rectisectaria, Guanica Insular Forest Preserve, Puerto Rico; 973, tana, Nassau, Bahamas; 974, lastima, Key Largo, Florida; 975, norma, La Rioja, Argentina; 976, constrictifascia, St. Jean, Maroni, French Guiana; 977, solitaria, Banana River, Costa Rica.

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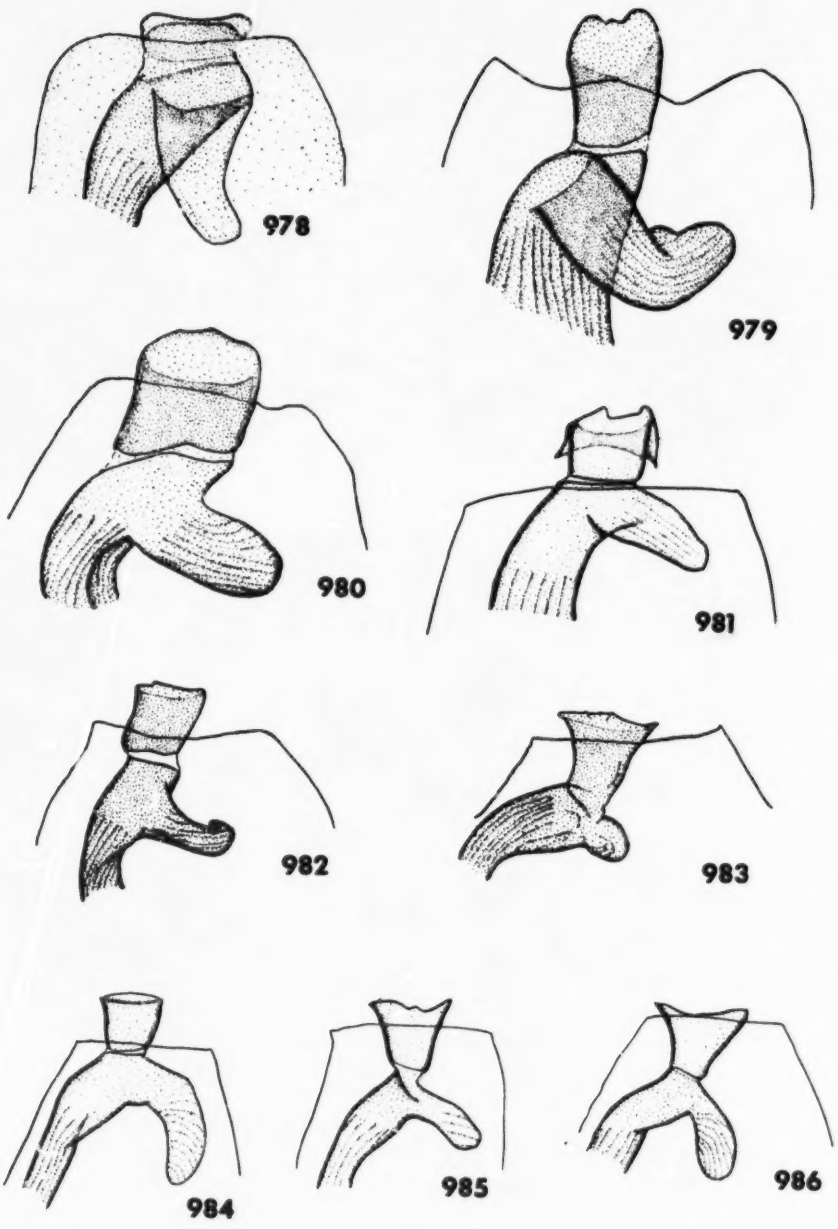

Figures 978-986.--Pero female genitalia: 978, albivena, Barro Colorado Island, Panama; 979, stolidata, Incachaca, Cochabamba, Bolivia; 980, bulba, "near Santa Marta," Colombia; 981, muza, Rancho Grande, Aragua, Venezuela; 982, fusaria, Zimapan, Hidalgo, Mexico; 983, spitzi, "Rio," Brazil; 984, contrasta, Rancho Grande, Aragua, Venezuela; 985, pernamba, Sierra de Bernada, Pernambuco, Brazil; 986, fusca, Paraná, Entre Ríos, Argentina.

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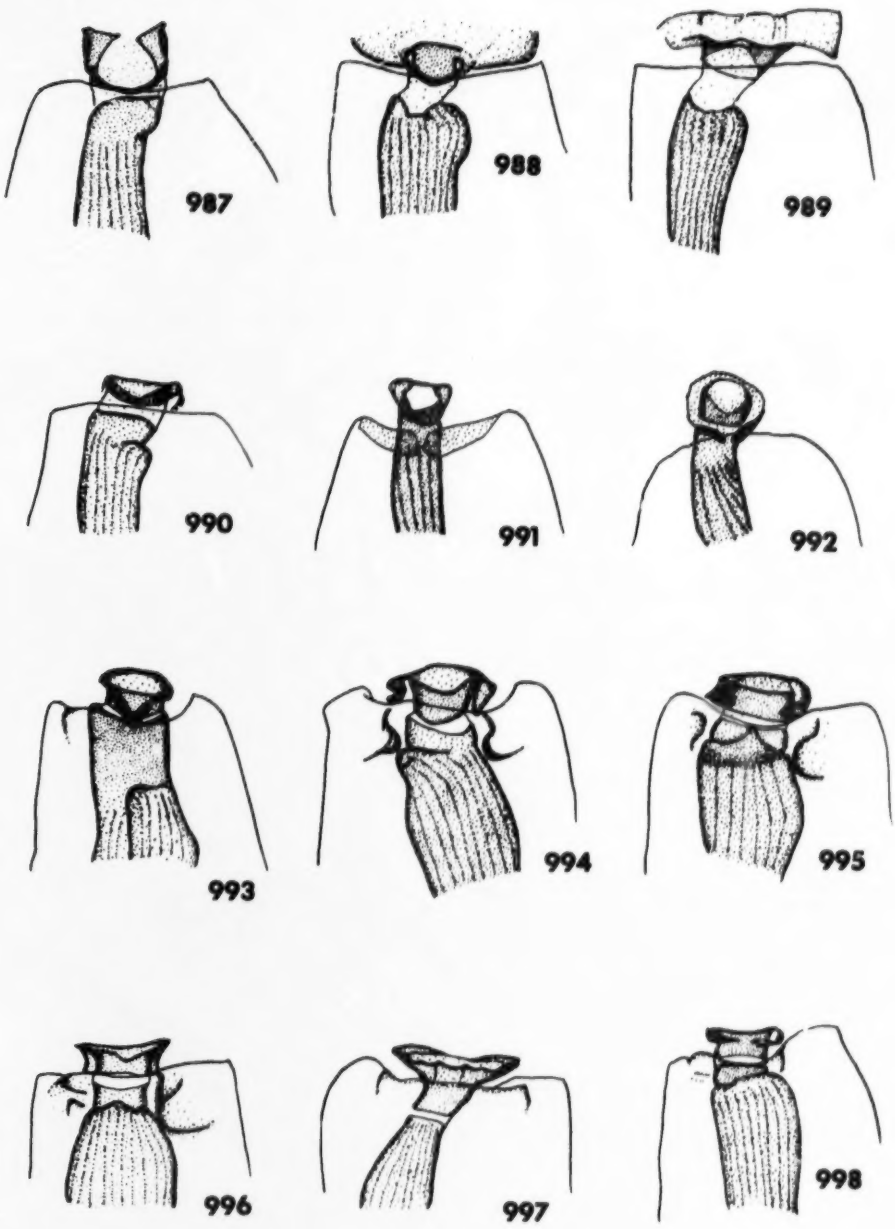

Figures 987-998.—Pero female genitalia: 987, plagodiata, Chiriquí, Panama; 988, otra, São Paulo de Olivença, Amazonas, Brazil; 989, polygonaria, Chejel, Baja Verapaz, Guatemala; 990, arciogona, Castro, Paraná, Brazil; 991, amanda, Chejel, Baja Verapaz, Guatemala; 992, pumaria, Satipo, Peru; 993, pallidior, Rancho Grande, Aragua, Venezuela; 994, clana, Porto Alegre, Rio Grande do Sul, Brazil; 995, speciosata, Loja, Ecuador; 996, costa, Monteverde, Puntarenas, Costa Rica; 997, decora, Castro, Paraná, Brazil; 998, delauta, Cayuga, Izabal, Guatemala.

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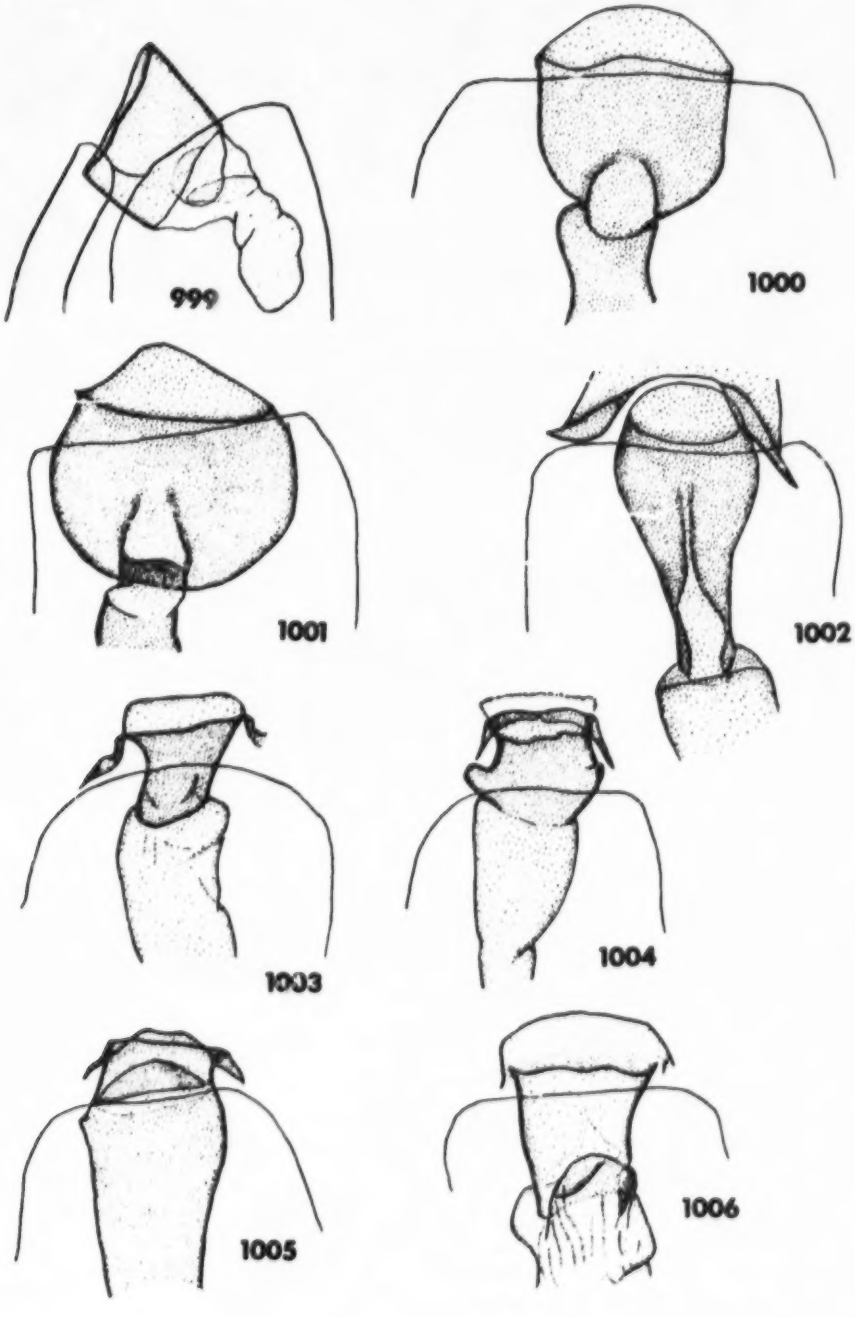

Figures 999-1006.--Puro female genitalia: 999, melissa, Lagos del Montebelo, Chiapas, Mexico, lateral view; 1000, rica, Pinar Bonito, Constanza, Dominican Republic; 1001, bicolor, Hardware Gap, Jamaica; 1002, vecina, Orizaba, Veracruz, Mexico; 1003, curuma, Guerrero, Mexico; 1004, idola, Turrialba, Costa Rica; 1005, lessema, Jalapa, Veracruz, Mexico; 1006, saturata, Santa Catarina, Brazil.

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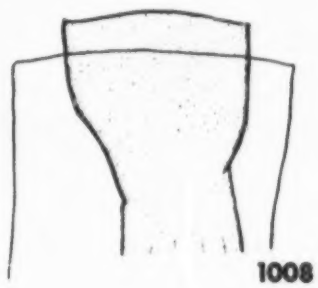

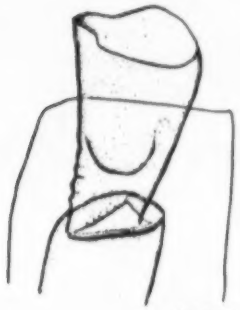

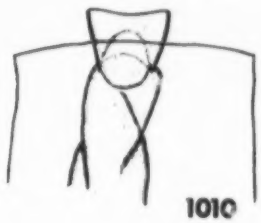

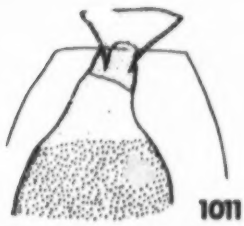

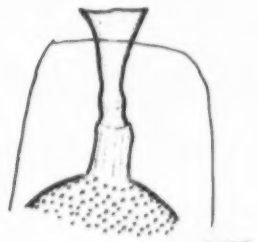

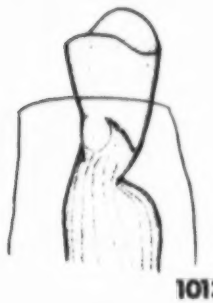

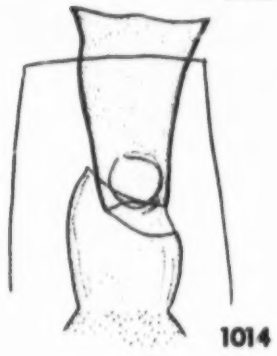

Figures 1007-1014.--Pero female genitalia: 1007, electra, Pacho, Colombia; 1008, nucleata, Agualani, Puno, Peru; 1009, rotundata, Rancho Grande, Aragua, Venezuela; 1010, aragua, Rancho Grande, Aragua, Venezuela; 1011, honestaria, New Brighton, Pennsylvania; 1012, hubneraria, Atlanta, Georgia; 1013, morriesonaria, no locality; 1014, gigantea, Provo, Utah.

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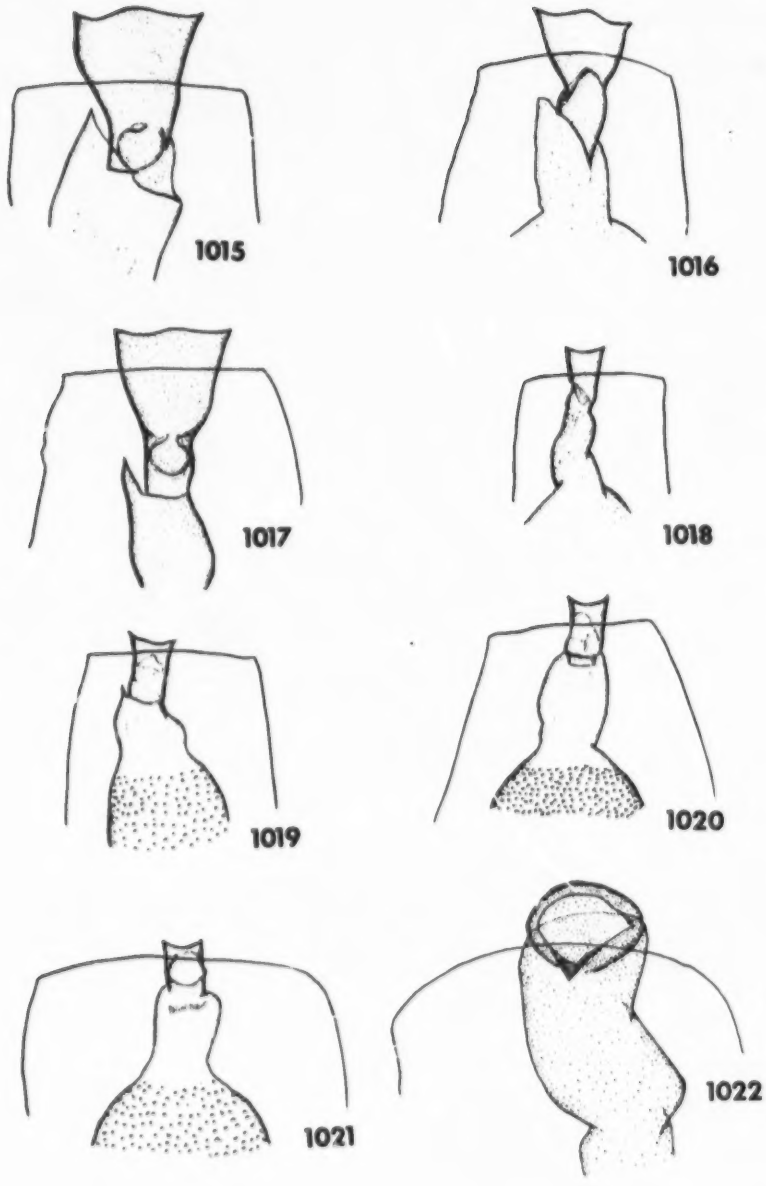

Figures 1015-1022.--Pero female genitalia: 1015, mizon, Shasta Retreat, California; 1016, macdunnoughi, San Diego, California; 1017, catalina, Santa Catalina Island, California; 1018, modesta, Walnut Canyon, Arizona; 1019, occidentalis, Provo, Utah; 1020, behrensaria, West Fork of Oak Creek Canyon, Arizona, and 1021, Monachee Meadows, Tulare Co., California; 1022, corata, Jalapa, Veracruz, Mexico.

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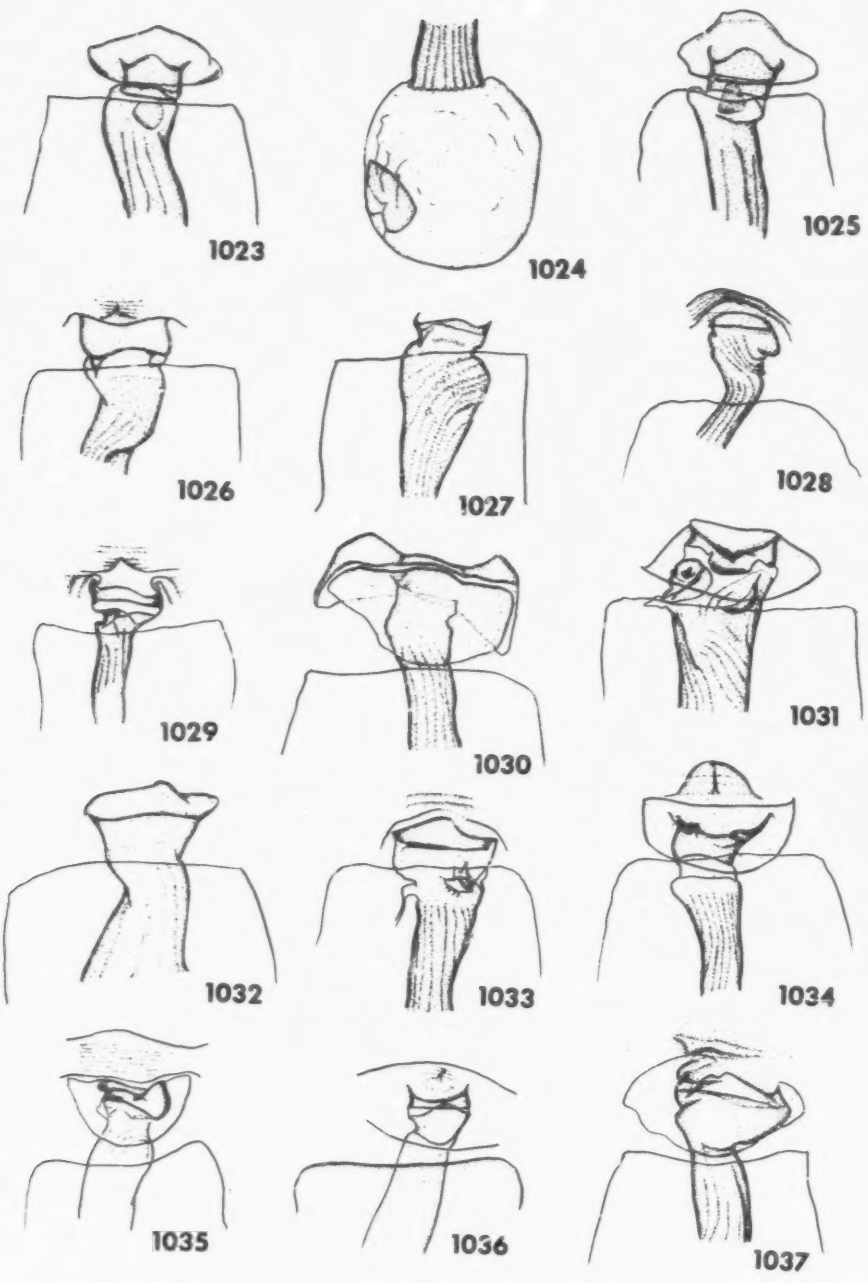

Figures 1023-1037.—Pero female genitalia: 1023, charadrea, Castro, Paraná, Brazil, and 1024, bursa; 1025, imperfectaria, Campo Belo, Rio de Janeiro, Brazil; 1026, simplex, São Paulo, Brazil; 1027, poaphilaria, "Rio," Brazil; 1028, mollis, Castro, Paraná, Brazil; 1029, geraesa, Minas Gerais, Brazil; 1030, calinaria, Castro, Paraná, Brazil; 1031, crocallaria, Castro, Paraná, Brazil; 1032, edentaria, "Rio Janeiro," Brazil; 1033, paranaria, Castro, Paraná, Brazil; 1034, amica, Pelotas, Rio Grande do Sul, Brazil; 1035, inconstans, Q. Cuervos, Treinta y Tres, Uruguay; 1036, refellaria, Castro, Paraná, Brazil; 1037, gonopteraria, Guarani, Rio Grande do Sul, Brazil.

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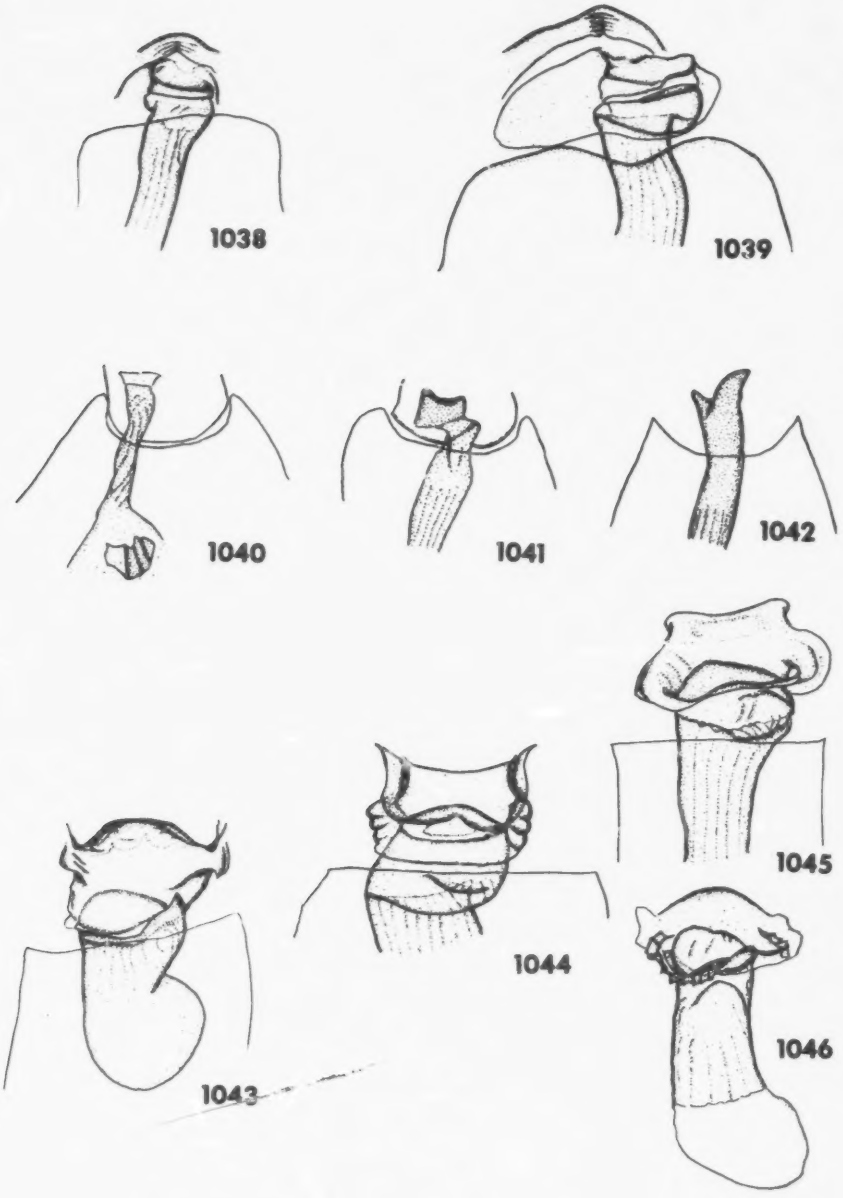

Figures 1038-1046.--Pero female genitalia: 1038, olivacea, Tucumán, Argentina; 1039, buckleyi, Mesopotamia, Antioquia, Colombia; 1040, externata, Castro, Paraná, Brazil; 1041, maculicosta, Nuevo Teutonia, Santa Catarina, Brazil; 1042, ochriscripta, Santo Domingo, Puno, Peru; 1043, velutina, Castro, Paraná, Brazil; 1044, habenaria, Brazil; 1045, hanebaria, Jaragua do Sul, Santa Catarina, Brazil; 1046, fea, Rio Vermelho, Santa Catarina, Brazil.

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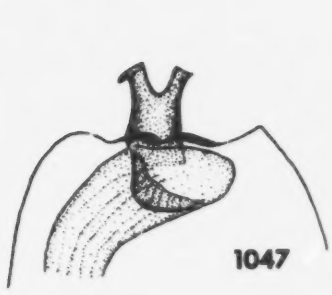

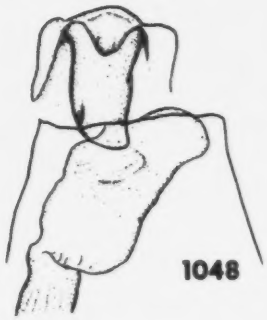

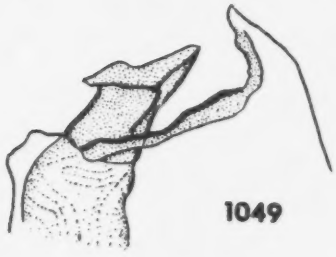

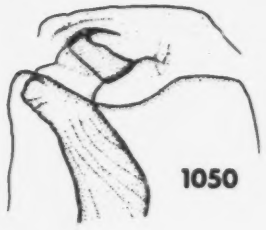

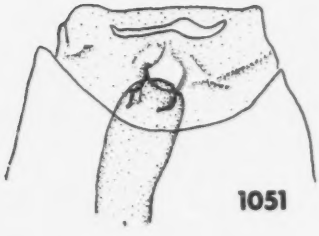

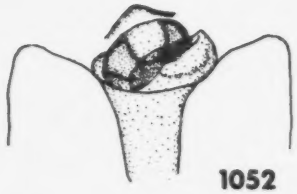

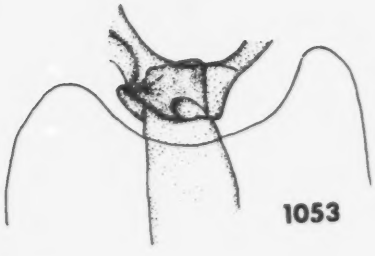

Figures 1047-1054.--Pero female genitalia: 1047, algerna, Incachaca, Cochabamba, Bolivia; 1048, moritzi, Rancho Grande, Aragua, Venezuela; 1049, spina, Guerrero, Mexico; 1050, mnasilaria, Rancho Grande, Aragua, Venezuela; 1051, turba, Santo Domingo, Puno, Peru; 1052, nasala, Incachaca, Cochabamba, Bolivia; 1053, periculosaria, Incachaca, Cochabamba, Bolivia; 1054, caliginosa, Tochesito, Tolima, Colombia.

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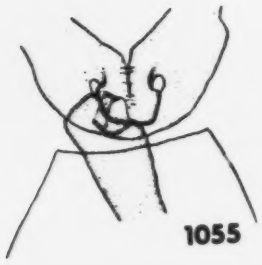

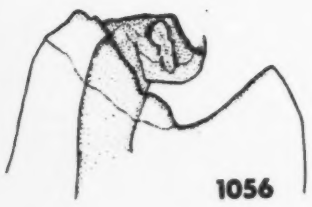

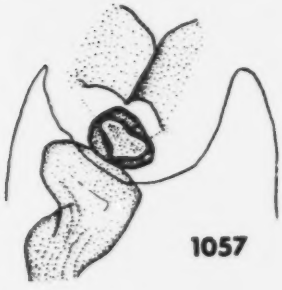

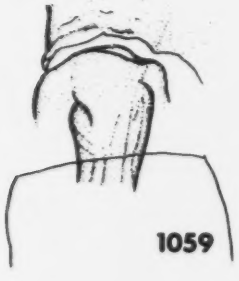

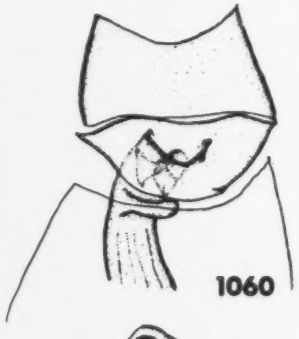

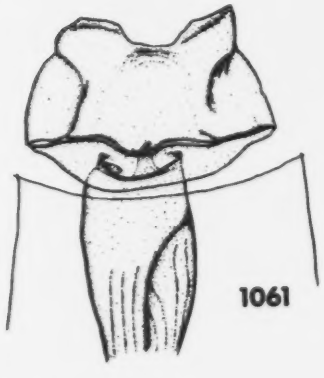

Figures 1055-1062.--Pero female genitalia: 1055, ochreicosta, Monte Tolima, Tolima, Colombia; 1056, cyclodaria, "Bolivia"; 1057, xylinaria, Ponta Grossa, Paraná, Brazil; 1058, isotenes, Pacho, Cundinamarca, Colombia; 1059, pretensa, Incachaca, Cochabamba, Bolivia; 1060, strapa, Balzapamba, Bolívar, Ecuador; 1061, rosota, Irazu, Costa Rica; 1062, ravida, Agualani, Puno, Peru.

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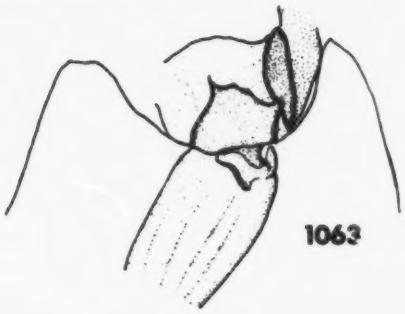

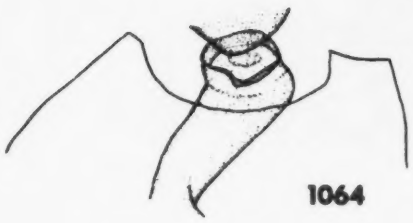

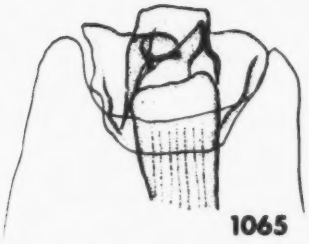

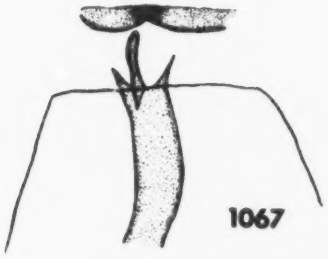

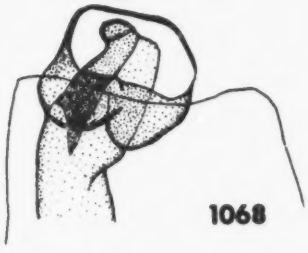

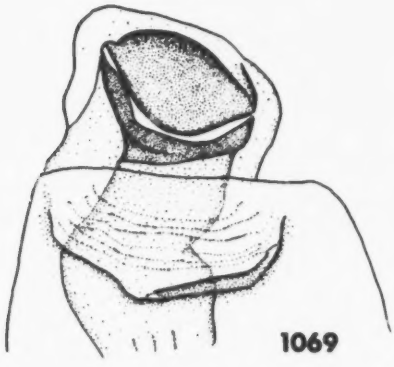

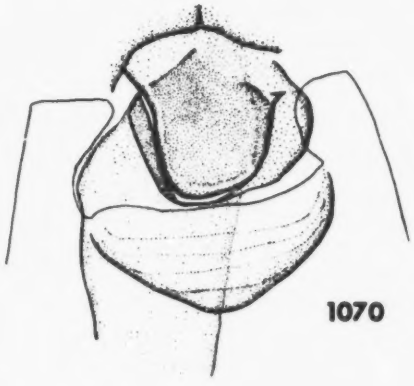

Figures 1063-1070.—Pero female genitalia: 1063, odonaria, "Santa Catharina," Brazil; 1064, ogmopoea, Incachaca, Cochabamba, Bolivia; 1065, derecha, Rancho Grande, Aragua, Venezuela; 1066, caustomeris, Incachaca, Cochabamba, Bolivia; 1067, lindigi, Pacho, Cundinamarca, Colombia; 1068, parambensis, Paramba, Imbabura, Ecuador; 1069, tabitha, Incachaca, Cochabamba, Bolivia; 1070, guacamaya, Rancho Grande, Aragua, Venezuela.

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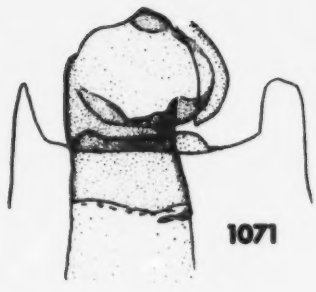

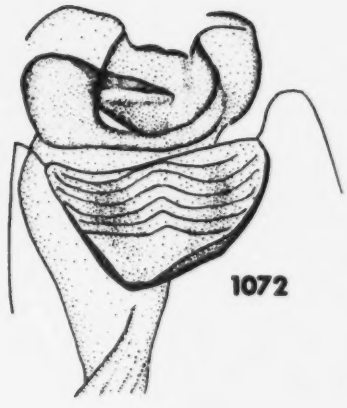

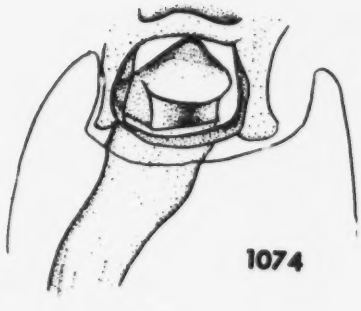

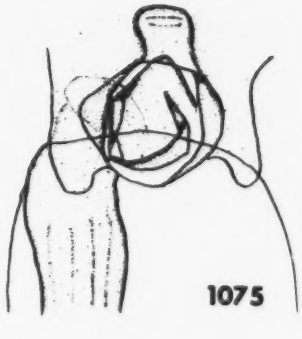

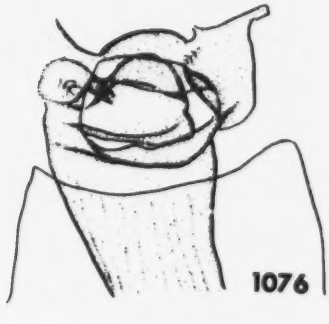

Figures 1071-1076.—Pero female genitalia: 1071, kaybina, Cartago, Cartago, Costa Rica; 1072, trena, Santo Domingo, Puno, Peru; 1073, alboculata, Santo Domingo, Puno, Peru; 1074, refna, Incachaca, Cochabamba, Bolivia; 1075, alaga, Oconeque, Puno, Peru; 1076, inferna, Limbani, Puno, Peru.

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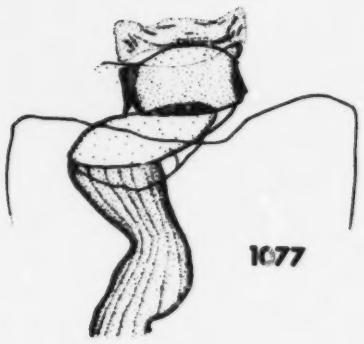

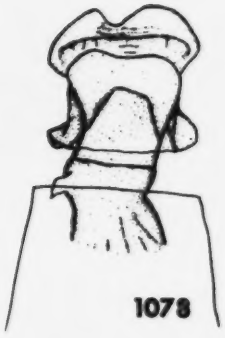

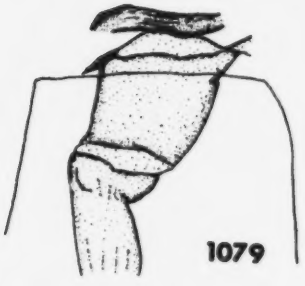

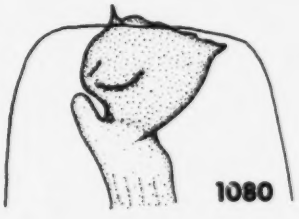

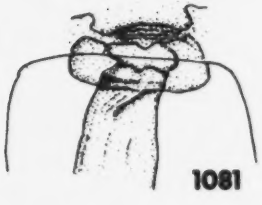

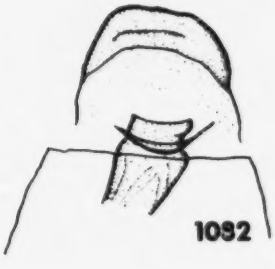

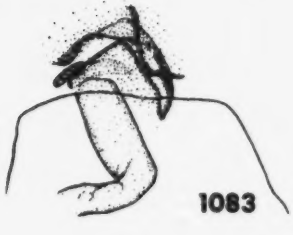

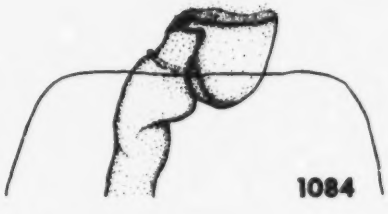

Figures 1077-1084.--Pero female genitalia: 1077, caerula, Vista Hermosa, Oaxaca, Mexico; 1078, heralda, Orosi, Cartago, Costa Rica; 1079, kayei, Hardware Gap, Jamaica; 1080, asterodia, Orizaba, Veracruz, Mexico; 1081, dularia, Middlesex, British Honduras; 1082, hoedularia, Tucumán, Argentina; 1083, sula, Tucumán, Argentina; 1084, mathilda, "Bolivia."

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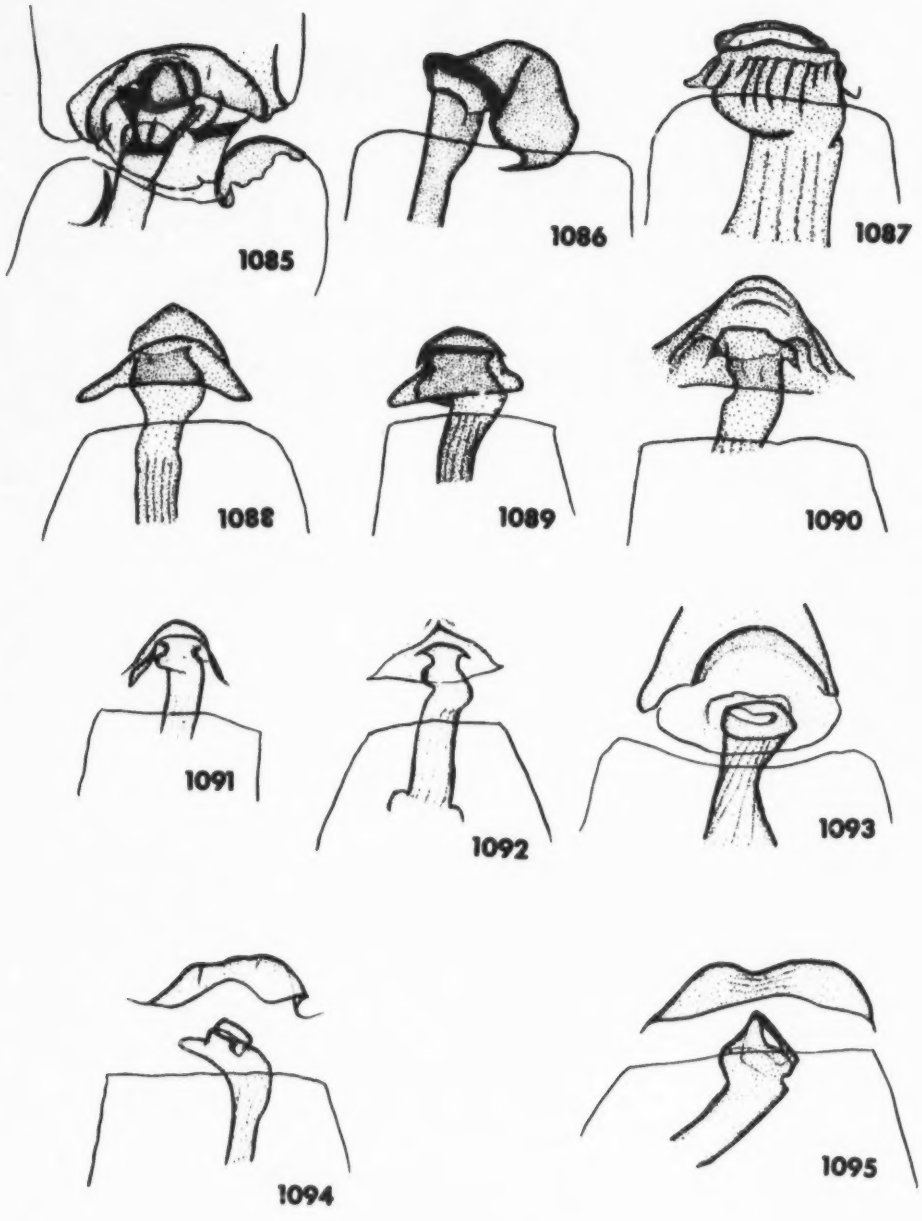

Figures 1085-1095.—Pero female genitalia: 1085, homodoxa, Santo Domingo, Puno, Peru; 1086, brynhilda, Tanampaya, Bolivia; 1087, colaloa, S. Pedro de Colaloa, Trancas, Argentina; 1088, cocha, "Bolivia"; 1089, inca, "Cochabamba," Bolivia; 1090, jonesaria, Castro, Paraná, Brazil; 1091, neuquena, Neuquen, Argentina; 1092, minopenaria, La Soledad, Entre Ríos, Argentina; 1093, scotica, Florida, Uruguay; 1094, galea, Guallabamba, Pichincha, Ecuador; 1095, erubescens, Hacienda Cayandeled, Ecuador.

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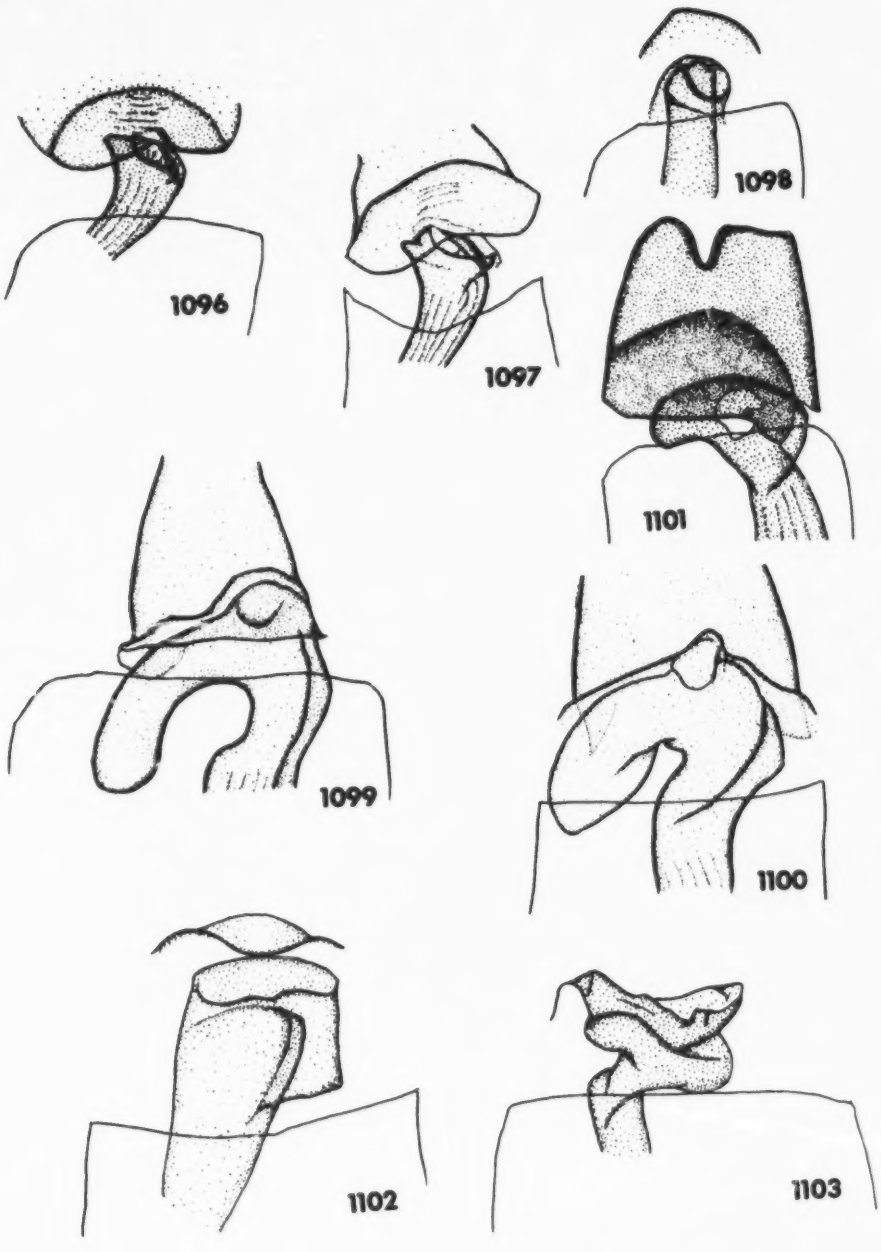

Figures 1096-1103.—Pero female genitalia: 1096, matucana, Trujillo, Peru; 1097, cinnamomina, Lima, Lima, Peru; 1098, barbarata, Loja, Loja, Ecuador; 1099, lara, Mérida, Venezuela; 1100, variaria, Jamaica; 1101, attagena, Huacapistana, Junin, Peru; 1102, beatricaria, Incachaca, Cochabamba, Bolivia; 1103, pincha, 50 km. W. Quito, Pichincha, Ecuador.

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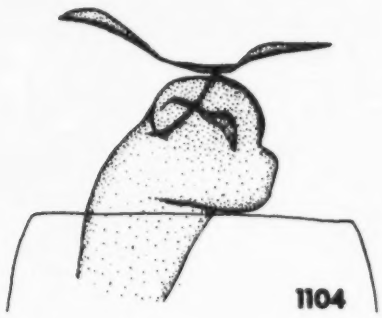

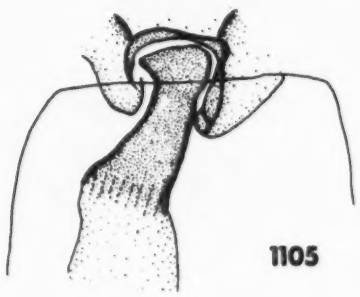

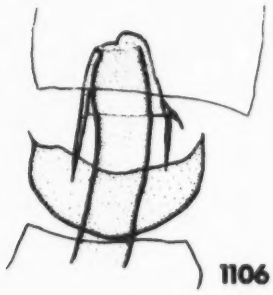

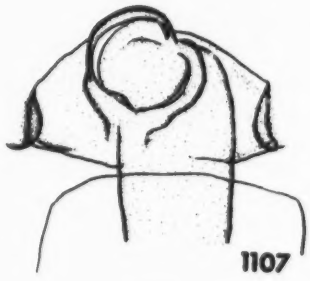

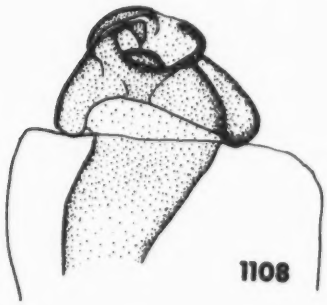

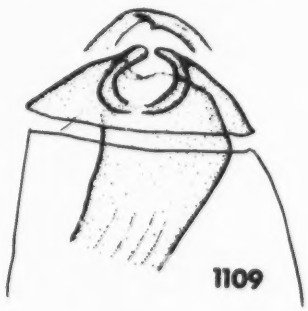

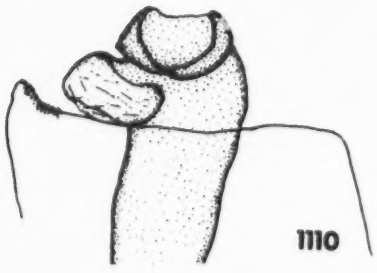

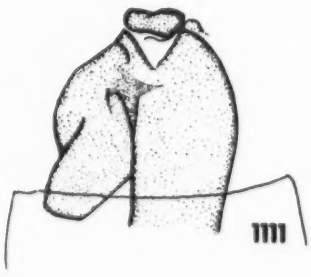

Figures 1104-1111.--Pero female genitalia: 1104, tricaria, Santo Domingo, Puno, Peru; 1105, spongiata, R. Cristal Mayu, Chapare, Bolivia; 1106, longisecta, Ypiranga, Brazil; 1107, fortunata, R. Tanampaya, Bolivia; 1108, unfortunata, Incachaca, Cochabamba, Bolivia; 1109, angulosa, Agualani, Puno, Peru; 1110, converga, Incachaca, Cochabamba, Bolivia; 1111, messidora, "Bolivia."

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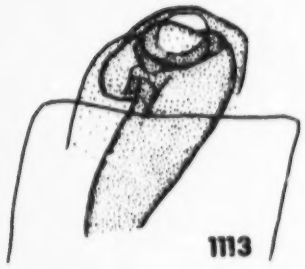

Figures 1112-1116.--Pero female genitalia: 1112, fraterna, Finca San Pablo, Cundinamarca, Colombia; 1113, crepera, Quindiu, Tolima, Colombia; 1114, lusa, Tucumán, Argentina; 1115, siambona, Siambon, Tucumán, Argentina; 1116, perioda, Rio Vermelho, Santa Catarina, Brazil.

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